ORIGINAL

BEFORE THE
Federal Communications Commission
WASHINGTON, DC 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of	)	
	)	
Prescribing the Authorized Unitary Rate of Return for Interstate Services of Local Exchange Carriers	)	CC Docket No. 98-166

COMMENTS OF U S WEST, INC.

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Date: January 19, 1999

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SUMMARY

Although U S WEST is a price cap LEC, the proposed represcription of the authorized rate-of-return is potentially of significant concern for U S WEST. For example, the Commission is proposing to adjust the low-end formula adjustment to reflect the represcribed rate-of-return. Further, forward-looking studies on which the high cost universal service fund will utilize, in part, the prescribed rate-of-return. In addition, new services offered by price-cap LECs are not incorporated under the price cap system until the first annual price cap tariff filing after the completion of the base year in which the new service becomes effective.

To that end, U S WEST has joined with Bell Atlantic and GTE in sponsoring the Affidavit of Professor James Vander Weide, Duke University. Dr. Vander Weide's affidavit concludes that the Commission should let the capital markets determine the LECs' rate-of-return on investment rather than represcribing a unitary rate-of-return.

U S WEST also presents the Affidavit of Mr. Peter C. Cummings, Director — Finance & Economic Analysis addressing cost of capital issues. Mr. Cummings agrees with Dr. Vander Weide that the Commission's current methodology for developing cost of capital is inappropriate. In Mr. Cummings view, the Commission should rely on the capital markets to allocate capital. If, however, the Commission elects to prescribe a rate-of-return, its should adopt a forward-looking weighted cost of capital (or incremental cost of capital), rather than the current regulatory book value cost of capital.

Accordingly, U S WEST urges the Commission not to prescribe a new unitary rate-of return but rather to take this opportunity to adopt new policies that support and direct the emergence of competition in the telecommunications markets. In that regard, if the Commission is to prescribe a new rate-of-return, it should do so on a forward-looking basis utilizing a cost of capital calculated from *market* interest rates, *market* cost of equity, and the *market values* of the debt and equity components of the LECs' capital structure.

U S WEST also urges the Commission to use the Discounted Cash Flow model and Capital Asset Pricing Model and apply them to industry and comparable risk groups of companies to estimate the cost of new equity.

Finally, U S WEST submits that the Commission should do nothing in this proceeding to undermine the incentive structure of price cap regulation and reintroduce inefficiencies associated with rate-of-return regulation. If, however, the Commission elects to change the low-end adjustment, it should tie the adjustment to a forward-looking rate-of-return.

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COMMENTS OF U S WEST, INC.

U S WEST, Inc. ("U S WEST") hereby submits the following comments in the above-captioned proceeding.

I. INTRODUCTION/BACKGROUND

On October 5, 1998, the Commission issued its *Rate-of-Return Notice* initiating a proceeding to prescribe the authorized rate-of-return for interstate access services provided by incumbent local exchange carriers ("LECs") subject to rate-of-return regulation.[1] In addition, the Commission seeks comments on methods by which it could calculate LECs' composite weighted average cost of capital.[2]

As a rate-of-return prescription proceeding, this matter is of primary relevance to those incumbent LECs that are still subject to rate-of-return regulation.[3] Consequently, as a price cap LEC, U S WEST will not file a direct case.

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1 *See Prescribing the Authorized Unitary Rate of Return for Interstate Services of Local Exchange Carriers*, CC Docket No. 98-166, *Notice Initiating a Prescription Proceeding and Notice of Proposed Rulemaking*, FCC 98-222 ¶ 7 (rel. October 5. 1998) ("*Rate-of-Return Notice*")

2 *Rate-of-Return Notice* at ¶ 1.

3 "To ensure that their rates for interstate access are just and reasonable, the Commission prescribes an authorized rate-of-return for the approximately 1300 incumbent [LECs] that are subject to rate-of-return rather than price cap regulation." *Id.* at ¶ 1.

Nevertheless, the represcription of the authorized rate-of-return has a potential impact upon U S WEST and other price cap LECs. Specifically, the low-end formula adjustment is keyed to the rate-of-return and the Commission is proposing to adjust the formula to reflect the represcribed rate-of-return.[4] Further, forward-looking studies on which the high cost universal service fund will reflect the prescribed rate-of-return.[5] In addition, new services offered by price-cap LECs are not incorporated under the price cap system until the first annual price cap tariff filing after the completion of the base year in which the new service becomes effective.[6] These ancillary impacts upon U S WEST are potentially significant. U S WEST therefore submits the following comments relating to the methods by which the Commission should calculate cost of capital.

In addition, U S WEST has joined with Bell Atlantic and GTE in sponsoring the Affidavit of Professor James Vander Weide, appended hereto as Appendix A. Dr. Vander Weide demonstrates that the Commission's methodology for determining a LEC's cost of capital is incorrect, uneconomic and conflicts with the Commission's stated goal of promoting competition by ensuring that telecommunications rates provide correct economic signals to the market participants.[7] Dr. Vander Weide also notes that the risk of investing in the LECs' local exchange

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4 *Id.* at ¶ 55. The Commission also seeks comment on whether a change in the low-end return level for LECs subject to price cap regulation is warranted. *Id.* The Commission proposes to set the low-end formula adjustment to 100 basis points below the authorized rate-of-return established in the instant prescription proceeding. *Id.*

5 *See Federal-State Joint Board on Universal Service*, 12 FCC Rcd. 8776, ¶ 224 (1997) ("*Universal Service Order*").

6 *See*, 47 C.F.R. §§ 61.44(g), 61.46(b), and 61.47(b); *see also LEC Price Cap Order*, 5 FCC Rcd. at 6824 ¶ 312.

7 *See, e.g.,* Vander Weide Affidavit at ¶¶ 18-20, 37.

operations has increased dramatically since the last prescription proceeding in 1990 and there "can be little doubt that investors demand a higher return in compensation for increased risk."[8] Consequently, Mr. Vander Weide concludes that the Commission should let the capital markets determine the LECs' rate-of-return on investment rather than represcribing a unitary rate-of-return.[9]

U S WEST also presents the Affidavit of Mr. Peter C. Cummings, Director — Finance & Economic Analysis, appended hereto as Appendix B. Mr. Cummings' Affidavit addresses cost of capital issues including capital structure and cost of equity. Mr. Cummings agrees with Dr. Vander Weide's conclusions that the Commission's current methodology for developing cost of capital is inappropriate. In Mr. Cummings' view, the Commission should rely on the capital markets to allocate capital.[10] If, however, the Commission elects to prescribe a rate-of-return, it should adopt a forward-looking weighted cost of capital (or incremental cost of capital) for rate-of-return purposes.[11]

On the basis of these affidavits, U S WEST urges the Commission not to prescribe a new unitary rate-of return but rather to promote policies that support and direct the emergence of competition in the telecommunications markets. In that regard, if the Commission is to prescribe a new rate-of-return, it should do so on a forward-looking basis utilizing a cost of capital calculated from *market* interest rates, *market* cost of equity, and the *market values* of the

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8 *Id.* at ¶ 36.

9 *Id.* at ¶ 37.

10 *See* Cummings Affidavit at 42.

11 *Id.* at i, 7-9.

debt and equity components of the LECs' capital structure.[12] U S WEST also urges the Commission to use both the Discounted Cash Flow ("DCF") model and Capital Asset Pricing Model ("CAPM") and apply them to industry and comparable risk groups of companies to estimate cost of new equity.

In addition, U S WEST disagrees with the Commission's proposal to change the low-end formula adjustment for price cap LECs. The Commission should do nothing to undermine the incentive structure of price cap regulation and reintroduce inefficiencies associated with rate-of-return regulation.

II. THE COMMISSION SHOULD DEVELOP A FORWARD-LOOKING WEIGHTED AVERAGE COST OF CAPITAL

The *Rate-of-Return Notice* solicits comments on methods by which the Commission can calculate the LECs' composite weighted average cost of capital.[13] Weighted average cost of capital is used to estimate the return that LECs subject to rate-of-return regulation will be authorized to earn on their investment in facilities used to provide regulated interstate services.[14] The Commission's methodology for calculating weighted average cost of capital reflects the LECs' regulatory book value of debt, preferred stock, and equity.[15] Regulatory book values essentially reflect the LECs' embedded cost of debt and equity for financing supporting LECs plant and equipment in rate base.[16]

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12 *See* Vander Weide Affidavit at ¶ 4; Cummings Affidavit at 7-9.

13 *Rate-of-Return Notice* at ¶ 1.

14 *Id.* at ¶ 9.

15 47 C.F.R. § 65.304; *see also Rate-of-Return Notice* at ¶ 10.

16 Cummings Affidavit at 8; Vander Weide Affidavit at ¶¶ 4-5.

Insofar as it is based upon historical costs of debt and equity, however, this methodology is no longer appropriate for prescribing a unitary rate-of-return. As Mr. Cummings points out, this methodology works reasonably well in "a true monopoly regulated environment" in which "all industry participants are similarly regulated and there are no unregulated substitutes for the monopoly services."[17] However, as both Mr. Cummings and Dr. Vander Weide demonstrate, this methodology is inefficient and uneconomic in developing competitive telecommunications markets.[18] To provide correct incentives for entry into local exchange markets, and to promote investment and innovation, the Commission must measure LECs' cost of capital in terms of market — not regulatory book — values. The Commission itself has recognized that in "dynamic, competitive markets, firms take action based not on embedded costs, but on the relationship between market-determined prices and forward-looking economic costs. . . . [B]ecause the cost of building an element is based on forward-looking economic costs, new entrants' investment decisions would be distorted if the price of unbundled elements were based on embedded costs."[19]

There can be no doubt that the basic rationale underlying the Commission's reliance on regulatory book values is rapidly unraveling. Indeed, a significant increase in LECs' investment risk strongly undermines any justification for the continued prescription of rate-of-return.

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17 Cummings Affidavit at 8.

18 Cummings Affidavit at 8-9; Vander Weide Affidavit at ¶¶ 20-21.

19 *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, 4 Comm. Reg. (P&F) 1, 168-69 ¶ 620 (1996) ("*Local Competition Order*").

According to Dr. Vander Weide, investment risk has been elevated due to four factors.[20] First is the expansion of operating leverage resulting from increased investment in fixed assets and software to provide interconnection and unbundled network investments to competitive local exchange carriers.[21] This increase exacerbates the sensitivity of the LEC's net income to fluctuations in revenues.[22] Second is developing competition in the local exchange telecommunications market.[23] Third is rapidly changing technologies which have increased the capability and lowered the cost of equipment, thereby threatening LECs' ability to recover their investment in new plant, and reducing cost of entry for competitors.[24] Finally, asymmetries in the regulation of telecommunications carriers result in LECs bearing significant regulatory disadvantages in the transition to a fully competitive local exchange market.[25]

As demonstrated by both Dr. Vander Weide and Mr. Cummings, the Commission should abandon its traditional rate-of-return based upon embedded costs and instead embrace forward-looking weighted average cost of capital. Forward-looking weighted average cost of capital measures the cost of the new capital (in the form of debt and equity) which must be raised to finance new investment — not the historical cost of equity and debt.

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20 Vander Weide Affidavit at ¶ 23.

21 *Id.* at ¶ 24.

22 *Id.*

23 *Id.* at ¶¶ 25-31.

24 *Id.* at ¶¶ 32-33.

25 *Id.* at ¶¶ 34-35.

It is almost axiomatic under financial theory that forward-looking weighted average cost of capital is to be relied upon for capital budget planning, project selection, evaluation, operations analysis, and assessment of profitability and shareholder value.[26] As Dr. Vander Weide states, forward-looking cost of capital is calculated "from *market* interest rates, *market* costs of equity, and the *market values* of the debt and equity components of the company's capital structure."[27] Market value represents the economic value of the company. Similarly, incremental costs of new debt and new equity are priced in the market — it is the market yield required by investors to finance new investment. Consequently, forward-looking cost of capital is more economically efficient and will provide correct economic signals for market entry, investment and innovation.

Moreover, adopting a forward-looking weighted average cost of capital would be consistent with the pro-competition mandate of the Telecommunications Act of 1996 and many of the Commission's implementing orders. For example, in adopting the Joint Federal-State Board's recommendation that universal service support be based upon forward-looking economic cost, the Commission found "that a forward-looking economic cost methodology creates the incentive for carriers to operate efficiently and does not give carriers any incentive to inflate their costs or to refrain from efficient cost-cutting."[28] Further, Commission criteria for Universal

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26 Cummings Affidavit at 2-7; *see also* Vander Weide Affidavit at ¶¶ 7-12.

27 Vander Weide Affidavit at ¶ 4.

28 *Universal Service Order* at ¶ 226.

Service cost studies state that "[o]nly long run forward-looking economic cost may be included. The cost must not be the embedded cost of the facilities, functions, or elements."[29]

Similar support for the use of forward-looking costs can be found in the Commission's *Local Competition Order*.[30] Also, in its *Access Charge Reform Order*, the Commission stated that:

> Rather than ignore or interfere with the effects of this developing competition on prices for interstate access services, we find that the public interest is best served by permitting emerging competition to affect access charge rate levels. In addition, the experience we gain from observing the effects of emerging competition on interstate access services will permit us more effectively and efficiently to implement any prescriptive measures that may be needed in the future to ensure that interstate access services remaining subject to regulation are priced in accordance with the forward-looking economic cost of providing those services.[31]

In light of the above, U S WEST submits that the Commission should not prescribe a unitary rate-of-return based upon embedded costs and regulatory book values. Instead, the Commission should rely on market forces to allocate capital. Nevertheless, should the Commission decide to go forward with prescribing the unitary rate-of-return, it must base that prescription upon a forward-looking weighted average cost of capital. To do otherwise, would "merely perpetuate[] an outmoded form of regulation."[32]

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29 *Id.* at ¶ 250.

30 *See supra Local Competition Order*, 4 Comm. Reg. (P&F) at 168-69 ¶ 620.

31 *Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing, End User Common Line Charges*, 12 FCC 15982, ¶ 269 (1997).

32 *Rate-of-Return Notice*, Dissenting Statement of Commissioner Furchtgott-Roth.

III. RECOMMENDATIONS FOR DETERMINING FORWARD-LOOKING WEIGHTED AVERAGE COST OF CAPITAL

A. Capital Structure

Financial theory states that to develop a forward-looking cost of capital, marginal costs of debt and equity should be weighted based upon a market value capital structure.[33] Market value of a firm's equity is equal to the number of outstanding shares multiplied by the price per share.[34] Market value of debt is equal to the sum of the market values of each of the company's long term debt issues, capital leases, and short term debt.[35]

Mr. Cummings notes, however, that market values are not readily available for all incumbent LECs.[36] Accordingly, U S WEST recommends that the Commission utilize an average of market value capital structures for large LECs or the average market value capital structure for the Standard & Poor's 500 companies as a surrogate.[37] Mr. Cummings calculates a capital structure of 19.9% debt/80.1% equity for large LECs and 20.6% debt/79.4% equity for the Standard & Poor's 500 companies.[38]

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33 Cummings Affidavit at 12-13.

34 *Id.*

35 *Id.*

36 *Id.* at 14.

37 U S WEST recognizes that the regulatory book value capital structure used in prescribing the authorized rate-of-return is dictated by regulation. 47 C.F.R. § 65.304. This fact, however, does not militate in favor of using that rate-of return in the place of a forward-looking weighted average cost of capital. Therefore, U S WEST urges the Commission to undertake the necessary procedures to establish a capital structure based upon the market values — rather than regulatory book values — of debt and equity, for use in such forward-looking cost studies.

38 *Id.* at 14.

B. Cost of Debt

The *Rate-of-Return Notice* seeks comment on methods for estimating the cost of debt for interstate services.[39] U S WEST submits that a forward-looking cost of capital must utilize cost of new debt, rather than embedded cost of previously issued debt on a company's accounting records. Cost of new debt depends upon the general level of interest rates, the credit quality of the company, and the maturity, terms, and conditions of the financing.[40] Generally, however, market yields plus underwriters fees and other issuance costs for comparable new debt issues can be used to estimate the incremental cost of new debt.[41] In that regard, U S WEST notes that GTE North, Sprint, as well as U S WEST, have each recently issued new debt and the yield spreads between these issues and comparable maturity U.S. Treasure securities can be used to estimate the current cost of debt.

C. Cost of Equity

The *Rate-of-Return Notice* proposes several methods for estimating the cost of equity for interstate services and solicits comments on each method.[42] The *Rate-of-Return Notice* also encourages parties to suggest additional methodologies.[43] As discussed in Mr. Cummings Affidavit, no single model can conclusively estimate cost of equity capital.[44] Consequently,

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39 *Rate-of-Return Notice* at ¶¶ 12-14.

40 Cummings Affidavit at 10-11.

41 *Id.*

42 *Rate-of-Return Notice* at ¶ 18.

43 *Id.*

44 Cummings Affidavit at 15-18.

U S WEST recommends that the Commission apply both the DCF and CAPM models to industry and comparable risk groups of companies to estimate the cost of new equity.[45] These methodologies are most appropriate for estimating current cost of new equity.

The DCF model uses the current market price and expected dividends. The CAPM model incorporates current interest rates and provides a risk measurement.[46] Further, an analysis of comparable companies will provide direct evidence on market required returns for comparable risk firms (*i.e.*, firms that the LECs must compete with to secure investor financing). Moreover, using two methods provide a cross check on the results of each method. In other words, the results obtained from each method should define a useful range of estimates for the cost of new equity.

1. Issues related to the DCF methodology

The Commission seeks comment on a number of issues specifically related to the DCF methodology. First, the Commission tentatively determined to use the Standard & Poor's Analysts Consensus Estimates ("ACE") rather than the Institutional Brokers Estimate System ("IBES") for the growth rate inputs to the DCF model.[47] U S WEST questions the reasonableness of this tentative conclusion. Using IBES growth rates is the more common approach and IBES has been collecting and disseminating forecasts longer than other competing services and is

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45 U S WEST notes that, like the cost of new debt, the cost of preferred stock financing can be estimated by reference to recent issues by other companies. The preferred stock embedded cost calculation proposed in the *Rate-of-Return Notice* does not provided the forward-looking economic value or market weighting of preferred stock capitalization. *See Rate-of-Return Notice* at ¶¶ 15-16.

46 Cummings Affidavit at 17-18.

47 *Rate-of-Return Notice* at ¶ 23.

utilized in most academic research requiring growth rate estimates.[48] Regardless of which service the Commission selects, however, U S WEST urges the Commission to ensure that its selection is based upon criteria such as number of analysts, frequency of updates, and procedures for maintaining the integrity of the data.

Second, the Commission tentatively concluded not to use quarterly compounding of dividends in the DCF model.[49] By assuming one annual dividend payment, however, the DCF model as proposed by the Commission would not properly reflect the reality of cash flows to investors.[50] This is contrary to reality and makes no sense. Timing of dividends is reflected in the current price of stock and thus must be considered in determining the cost of equity.[51] U S WEST, therefore, urges the Commission to use quarterly compounding of dividends in its DCF model.

Third, the Commission tentatively concluded not to compensate for floatation costs in applying the DCF model.[52] The fact is, however, that stock floatation costs are real and must be accounted for in financing and capital budgeting. Simply put, cost of equity capital (or return on equity capital that a company receives from its shareholders' investment) is always greater than the market required rate of return because of expenses associated with issuing the

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48 Cummings Affidavit at 19.

49 *Rate-of-Return Notice* at ¶ 24.

50 Cummings Affidavit at 22.

51 *Id.* at 20-22.

52 *Rate-of-Return Notice* at ¶ 25.

stock. Consequently, there should be some adjustment to account for such costs.[53] U S WEST recommends the Cost of Capital Approach ("CCA") as the appropriate method for estimating floatation costs.[54]

Finally, the Commission suggested that an average of monthly high and low stock prices would be appropriate to use as the stock price input to the DCF model.[55] U S WEST does not agree with this proposal. The DCF model is premised upon the understanding that current stock prices reflect the present value of all future cash flows.[56] Current stock prices and therefore cost of equity varies with market conditions and may be distorted by market reaction to a news story, heavy buying or selling or some other factor. Monthly averages are simply averaged over too long a period of time to protect against the possibility that stock prices might be distorted by such conditions.[57] Accordingly, U S WEST recommends averaging stock prices for a shorter period of time (*i.e.*, 10 days).

2. Issues relating to risk premium methodologies

The Commission seeks comment on a number of issues specifically related to risk premium methodologies for calculating weighted average cost of capital.[58] As noted above, U S WEST recommends that the Commission use the CAPM model in conjunction with the DCF

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53 Cummings Affidavit at 23-25.

54 *Id.*

55 *Rate-of-Return Notice* at ¶ 27.

56 Cummings Affidavit at 25.

57 *Id.* at 25-26.

58 *Rate-of-Return Notice* at ¶¶ 31-33.

model and use the historical risk premium between stocks and corporate bonds to check results from the DCF and CAPM models. The CAPM model has been in use for more than 30 years, it is a thoroughly researched concept and remains the dominant model for estimating cost of equity capital.[59]

As to historical risk premium, the Commission seeks comment on the time period from which historical risk premium data should be drawn.[60] Mr. Cummings has researched the issue and concluded that while the risk premium varies over time, it tends to vary around a particular average or mean.[61] This average or mean would serve as the best measure of the expected risk premium.[62] Thus, U S WEST recommends that the Commission calculate this average or mean by calculating the average risk premium over the longest period for which high quality data is available 1926-1997 (72 years).[63]

The Commission also seeks comment on the weight forward-looking, or expected, risk premium estimates should be given in its rate-of-return analysis.[64] U S WEST recommends that the Commission utilize market weighted average of expected market risk premiums for each of the Standard & Poor's 500 (or 400 companies) calculated with the DCF model.[65] The current

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59 Cummings Affidavit at 26.

60 *Rate-of-Return* at ¶ 34.

61 Cummings Affidavit at 27-28.

62 *Id.*

63 *Id.*

64 *Rate-of-Return Notice* at ¶ 35.

65 Cummings Affidavit at 30.

intermediate or long term U.S. Treasury bond yields should then be subtracted from this market weighted average, to estimate the forward-looking market risk premium.[66] U S WEST submits further that this estimate should be weighted equally with the historical market risk premium estimate.[67]

The Commission also seeks comment on which risk-free rate should be adopted for the risk premium methodology.[68] U S WEST recommends utilizing intermediate to long term risk free rates U.S. Treasury notes and bonds for estimating the cost of equity. These risk-free rates are commonly employed by corporations and financial advisors, are recommended in finance texts, and are appropriate for a number of other reasons highlighted by Mr. Cummings.[69]

Finally, the Commission seeks comment on the appropriate estimation of a securities risk or "beta" for input into the CAPM model.[70] As the Commission notes, parties in the 1990 prescription proceeding recommended utilizing betas provided by the *Value Line Investment Survey*.[71] U S WEST recommends that the Commission adopt this proposal and use *Value Line* betas as well as those published by *Merrill Lynch*. Both sets of betas are comparable and are widely available to investors.[72]

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66 *Id.*

67 *Id.*

68 *Rate-of-Return Notice* at ¶ 36.

69 Cummings Affidavit at 30-31.

70 *Rate-of-Return Notice* at ¶ 37.

71 *Id.*

72 Cummings Affidavit at 32-34.

IV. LOW-END ADJUSTMENT FOR PRICE CAP LECS

Finally, the *Rate-of-Return Notice* seeks comment on whether a change in the low-end return level for LECs subject to price cap regulation is warranted.[73] Price cap LECs are larger LECs which are regulated under a price cap rather than on a rate-of-return basis. The Commission's rules currently permit price cap LECs with earnings of less than 10.25% for interstate access services to increase their price cap indices to a level that would enable them to earn 10.25%.[74] This low-end formula adjustment is intended to present a risk of reduced earnings if the carrier fails to control costs without creating the possibility that rates would become so low as to be confiscatory.[75]

Currently, the low-end formula adjustment is 100 basis point below the authorized unitary rate-of-return. The Commission proposes to set the low-end formula adjustment to 100 basis points below the new authorized rate-of-return.[76]

At the outset, U S WEST submits that the Commission should do nothing in this proceeding to undermine the incentive structure of price cap regulation and reintroduce inefficiencies associated with rate-of-return regulation. Price cap regulation was designed as an incentive-based system of regulation intended to produce rates within a "zone of reasonable-

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73 *Rate-of-Return Notice* at ¶ 55.

74 *Policy and Rules Concerning Rates for Dominant Carriers*, 5 FCC Rcd. 6786, 6804 ¶¶ 147-49 (1990) ("*LEC Price Cap Order*"), *erratum*, 5 FCC Rcd. 7664 (CCB 1990), *modified*, 6 FCC Rcd. 2637 (1991); *aff'd sub nom. National Rural Telecom Ass'n v. FCC*, 988 F.2d 174 (D.C. Cir. 1993).

75 *LEC Price Cap Order*, 5 FCC Rcd. at 6807 ¶ 164.

76 *Rate-of-Return Notice* at ¶ 55.

ness."[77] To that end, the price cap is subject to an annual adjustment to ensure that prices will drop in real, inflation-adjusted terms.[78] By placing such "downward" pressure upon the price cap, the Commission intended to create a regulatory environment that requires carriers to become more productive.[79] Price cap regulation is a two-edged sword — carriers that increase their productivity can earn revenues above those of rate-of-return carriers, while those that fail to increase productivity will suffer accordingly.[80]

If, however, the Commission elects to change the low-end adjustment, U S WEST urges the Commission to tie the adjustment to a forward-looking rate-of-return. As discussed above, the capital structure the Commission uses to develop the authorized unitary rate-of-return is based upon regulatory book value of debt and equity and thus is not appropriately forward-looking. In U S WEST's view, it is inappropriate from a financial perspective, to apply such a capital structure to price cap-regulated LECs. A low-end adjustment formula based upon a forward-looking weighted average cost of capital will best serve the fundamental incentive structure of price cap regulation.

As the Commission found in its *LEC Price Cap Order*, rate-of-return regulation is not the best method for regulating highly complex and competitive industries.[81] Indeed, as the Commission has recognized, rate-of-return regulation tends to produce significant economic

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77 *LEC Price Cap Order*, 5 FCC Rcd. at 6787 ¶ 3.

78 *Id.*

79 *Id.* at 6789 ¶ 22.

80 *Id.*

81 *See id.* at 6790 ¶ 29.

inefficiencies and it is "more desirable to permit LECs to migrate their rates toward a set of prices that enhances efficiency."[82] Insofar as it is based upon regulatory book values of debt and equity, using the prescribed rate-of-return to set the low-end formula adjustment reintroduces rate-of-return inefficiencies into price cap regulation. Accordingly, U S WEST submits that the Commission would be best served by tying the low-end adjustment formula to a forward-looking rate-of-return based upon market values of debt and equity.

CONCLUSION

For the above reasons, if the Commission prescribes a new rate-of-return, U S WEST urges it do so on a forward-looking basis utilizing a cost of capital calculated from *market* interest rates, *market* cost of equity, and the *market values* of the debt and equity components of the LECs' capital structure. U S WEST also urges the Commission to apply the DCF and CAPM models applied to industry and comparable risk groups of companies to

82 *Id.*

estimate the cost of new equity. In addition, the Commission should tie the low-end adjustment formula to a forward-looking rate-of-return based upon market values of debt and equity.

Respectfully submitted,

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Appendix A

Before the
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Interstate Services of Local	)	
Exchange Carriers	)	

AFFIDAVIT OF JAMES H. VANDER WEIDE

I. Introduction

1. My name is James H. Vander Weide. I am Research Professor of Finance and Economics at the Fuqua School of Business, Duke University. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to clients in the electric, gas, insurance, telecommunications, and water industries. My business address is 3606 Stoneybrook Drive, Durham, North Carolina.

2. As a Professor at Duke University, I have taught courses in corporate finance, investment management, management of financial institutions, statistics, economics, and operations research, as well as a Ph.D. seminar on the theory of public utility pricing. I have also been active in executive education at Duke, directing and teaching in executive programs both stateside and abroad for leading international firms. In addition to my teaching, I have written a book entitled, *Managing Corporate Liquidity: An Introduction to Working Capital Management*, and numerous articles and research papers on such topics as portfolio management, the cost of capital, capital budgeting, the effect of regulation on the performance of public utilities, and cash management. I hold a Ph.D. in finance from Northwestern University and a B.A. in economics from Cornell University.

II. Purpose

3. In response to the Notice of Proposed Rulemaking in CC Docket 98-166, Bell Atlantic, GTE, and US West have asked me to: (1) review the proposed methodology for estimating the LECs' weighted average cost of capital; (2) evaluate whether the proposed methodology is consistent with economic theory and the Commission's goal of establishing "correct signals for entry, investment, and innovation "[1] in telecommunications markets; and (3) assess whether use of a correct definition of the weighted average cost of capital is likely to justify a change in the LECs' currently authorized rate of return.

4. I conclude that the proposed methodology is inconsistent with both the economic definition of the weighted average cost of capital and the Commission's goal of establishing correct signals for entry, investment, and innovation in telecommunications markets. Competitive firms make their entry, investment, and innovation decisions using a cost of capital calculated from *market* interest rates, *market* costs of equity, and the *market values* of the debt and equity components of the company's capital structure. The competitive market definition of the cost of capital is consistent with economic theory. In contrast, the Notice includes a proposal to calculate the cost of capital using an *embedded* cost of debt and a *book value* capital structure, just as the Commission has in the past. If the Commission sets an authorized rate of return based on embedded costs and book values, it is unlikely to achieve its goal of providing correct signals for entry, investment, and innovation. If the Commission correctly estimates the cost of capital using market values and market interest rates and costs of equity, it is likely to find that a reduction in the authorized rate of return for the LECs can not be justified.

[1] *Fifth Report & Order in the Matter of Federal-State Joint Board on Universal Service*, FCC 98-279, ¶10.

5. The policy of setting the LECs' authorized rate of return based on a book value definition of the cost of capital is rooted in an era when LECs were partially protected from competitive entry and the book value of the LECs' equity more closely approximated the market value of their equity. In considering a represcribed rate of return for the LECs, the Commission must recognize that the LECs' book value capital structures no longer approximate their market value capital structures. Setting the LECs' authorized rate of return based on a book value capital structure that significantly understates the equity in the LECs' market value capital structures would preclude the LECs from earning a rate of return that is commensurate with the return they could earn on other investments of the same risk.

6. In assessing the LECs' authorized rate of return, the Commission must also recognize that the LECs' investment risk has increased significantly since the Commission last authorized a unitary rate of return in 1990. Since that time, Congress has removed all barriers to entry into the local exchange market, and rapid advances in telecommunications technologies offer competitors an opportunity to enter the market at reasonable cost. As a result of these changes, competition for local exchange services is flourishing. The increased risk resulting from increased competition and rapidly changing technology in local exchange markets has caused investors to demand a higher risk premium for telecommunications investments. The Commission must recognize this higher risk premium in determining the LECs' authorized rate of return. Indeed, the Commission must now employ a market-based definition of the cost of capital that is consistent with the way firms measure the cost of capital in competitive markets.

III. Economists Define the Weighted Average Cost of Capital in Terms of Market Values, not Book Values.

7. Economists define the required rate of return, or cost of capital, for a particular investment as the return investors forego by making that investment rather than an alternative

investment of equal risk. Rational investors will not invest in a particular investment opportunity if the expected return on that opportunity is less than the cost of capital. Thus, the expected return on a particular investment, along with the cost of capital, provides a signal that investors can use to make resource allocation decisions. If the expected return on an investment in new telecommunications facilities exceeds the cost of capital, potential competitors will enter the telecommunications industry as new facilities-based providers. If the expected rate of return on investment in new telecommunications facilities is less than the cost of capital, potential competitors will invest their resources in other investments of comparable risk.

8. In defining the cost of capital, economists recognize that investors have different positions in the firm. Debt investors have a fixed claim on a firm's assets and income that must be paid prior to any payment to the firm's equity investors. Since the firm's equity investors have a residual claim on the firm's assets and income, equity investments are riskier than debt investments. Thus, equity investors require a higher rate of return on their investment than debt investors, and a firm's overall cost of capital depends on the mix of debt and equity in its capital structure.

9. The overall or weighted average cost of capital is a weighted average of the cost of debt and the cost of equity, where the weights are the percentages of debt and equity in the firm's capital structure. Consistent with the opportunity cost definition of the cost of capital, economists define the cost of debt as the market interest rate that a firm would have to pay on newly-issued debt obligations. In efficient markets, the market interest rate is also the best estimate of future interest rates. The correct economic definition of the cost of debt is thus forward looking and market oriented. The embedded cost of debt is an irrelevant concept to economists.

10. The correct economic definition of the cost of equity also incorporates the principle of opportunity costs. Thus, economists define the cost of equity as the return investors expect to receive on alternative equity investments of comparable risk. Since the return on an equity investment of comparable risk is not a contractual return, the cost of equity is more difficult to measure than the cost of debt. There is agreement, however, as I have already noted, that the cost of equity is greater than the cost of debt. There is also agreement among economists that the cost of equity, like the cost of debt, is both forward looking and market based.

11. The final components of the weighted average cost of capital are the percentages of debt and equity in a firm's capital structure. Economists measure these percentages by first calculating the market value of the firm's debt and the market value of its equity. Economists then calculate the percentage of debt by the ratio of the market value of debt to the combined market value of debt and equity, and the percentage of equity by the ratio of the market value of equity to the combined market values of debt and equity. For example, if a firm's debt has a market value of $20 million and its equity has a market value of $80 million, then its total market capitalization is $100 million, and its capital structure contains 20 percent debt and 80 percent equity.

12. Economists measure a firm's capital structure in terms of the market values of its debt and equity because market values are the best measure of the amounts of debt and equity that investors have invested in the company on a going-forward basis. The requirement to use market value weights is universally stated in the economics and finance literature. According to Copeland, Koller, and Murrin, for example, "[T]he estimate of the cost of capital must...employ market value weights for each financing element, because market values reflect the true

economic claim of each type of financing outstanding, whereas book values usually do not."[2] Likewise, Ross and Westerfield state, "Market value weights are more appropriate than book value weights because the market values of the securities are close to the actual dollars that would be received from their sale."[3] Furthermore, economists generally assume that the goal of management is to maximize the value of the firm, where the value of the firm is the sum of the market value of the firm's debt and equity. Only by measuring a firm's capital structure in terms of market values can its managers choose a financing strategy that maximizes the value of the firm.

IV. Investors and Financial Practitioners Define the Cost of Capital in Terms of Market Values, not Book Values.

13. The economic definition of the cost of capital is widely accepted by capital market participants. Homeowners measure the value of their homes in terms of market values, not historical cost or book values. Investors measure the return and risk on their portfolios in terms of market values, not book values. Companies use a market value definition of the cost of capital to make entry, investment, and innovation decisions.

14. To illustrate the general applicability of the use of a market value definition of the cost of capital and rate of return, suppose an investor has a portfolio which has a market value of $100,000 at the beginning of 1997. Also suppose that the value of the portfolio at the end of 1997 is $112,000 and that the investor earns interest and dividends of $3,000 during the course of 1997. Then the investor's rate of return in 1997 is 15 percent [(112 - 100/100) + 3/100 = 15 percent].[4]

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[2] Tom Copeland, Tim Koller, Jack Murrin, *Valuation, Measuring and Managing the Value of Companies*, John Wiley & Sons, Inc., pp. 239—240.
[3] Stephen A. Ross, Randolph W. Westerfield, *Corporate Finance*, Times Mirror/Mosby College Publishing, p. 218.
[4] For simplicity, this example assumes that dividends and interest are not reinvested in the portfolio during the year.

15. Suppose that the investor in the previous example had purchased the portfolio in 1977 at a cost of $20,000. The fact that the investor purchased the portfolio in 1977 for $20,000 has no bearing on the investor's earned rate of return in 1997. Thus, the historical or embedded cost of the investment is irrelevant to the calculation of the investor's rate of return. Investors calculate their rates of return based on market values, not book values.

16. The economic definition of the cost of capital is also used by investors who hold both debt and equity in their portfolios. Investors who hold both debt and equity in their portfolios measure their required return by calculating a weighted average of their required returns on the debt and equity portions of the portfolio, where the weights are measured in terms of market values, not book values. For example, if a firm's debt has a market value of $20 million, its equity has a market value of $80 million, the market interest rate on corporate debt of similar risk is 7.5 percent, and the market required return on equity of similar risk is 15 percent, then the required rate of return on a $100 million portfolio containing all of the firm's debt and equity securities would be 13.5 percent (.20 x 7.5 percent + .80 x 15 percent = 13.5 percent). Thus, the investors' required rate of return from an investment in the firm is the same as the firm's weighted average cost of capital, where both the required rate of return and the weighted average cost of capital are measured in terms of market value weights.

17. As confirmed by recent surveys,[5] managers also use a market value definition of the weighted average cost of capital in making investment decisions. From the manager's perspective, the firm's cost of capital is equal to the return investors can earn on the market value of other investments of the same risk. Rational managers, like rational investors, will not

[5] Robert F. Bruner, Kenneth M. Eades, Robert S. Harris, and Robert C. Higgins, "Best Practices in Estimating the Cost of Capital: Survey and Synthesis," *Financial Practice and Education* [FPE], Volume 8, Number 1, Spring/Summer 1998, pp. 13—28.

commit company resources to investments in new markets or technologies unless the expected return on the market value of these investments in new markets or technologies is greater than or equal to the firm's cost of capital, measured on a market value basis, for projects with the same degree of risk.

V. The Proposed Definition of the Cost of Capital Is Inconsistent with the Economic Definition of the Cost of Capital.

18. The preceding sections present abundant evidence that both economic theory and market practice stipulate the use of market interest rates and market value capital structures in calculations of the weighted average cost of capital. Contrary to economic theory and market practice, the Notice contains a proposal to continue estimating the weighted average cost of capital on the basis of embedded interest rates and the average book value capital structure of incumbent LECs. The Commission should be aware that this proposal is inconsistent with sound economic theory and practice. If the Commission were to adopt the proposal to calculate the authorized rate of return on the basis of a book value capital structure, the LECs would have no economic incentive to continue to invest in their networks, and potential competitors would have no economic incentive to enter the local exchange market as facilities-based providers.

19. The Commission's policy of setting the LECs' authorized rate of return on the basis of an embedded interest rate and book value capital structure began at a time when market value and book value capital structures were reasonably similar. At year end 1984, for example, the first year of the AT&T divestiture, the average market-to-book ratio for the five remaining RHCs and GTE was approximately 1.0. At year end 1997, however, the average market-to-book ratio for these same companies was approximately 5.0, as shown in Table 1. To use an average book value capital structure to set the LECs' authorized rate of return at a time when book value no longer approximates the market value of the LECs' equity would seriously distort economic

reality, and, by denying the LECs' an opportunity to earn a rate of return that is commensurate with market returns on other investments of the same risk, would destroy the LECs' incentive to continue investing in their networks.

Table 1[6]

Company	Market Value 12/31/97	Book Value	Market-to-Book	Market Value 12/31/90	Book Value	Market-to-Book	Market Value 12/31/84	Book Value	Market-to-Book
Ameritech	44,194.500	8,308.000	5.3	17,644.289	7,732.398	2.3	7,528.911	7,087.496	1.1
Bell Atlantic	70,666.050	13,900.802	5.1	21,085.261	8,930.000	2.4	8,006.736	7,508.496	1.1
BellSouth	55,861.504	15,669.000	3.6	26,388.931	12,666.398	2.1	10,170.576	9,414.496	1.1
GTE	50,055.500	10,291.000	4.9	19,579.716	9,882.000	2.0	8,297.332	8,509.167	1.0
SBC	67,290.453	9,892.000	6.8	16,792.664	8,581.199	2.0	7,042.088	6,994.789	1.0
US West	21,863.739	4,199.000	5.2	15,297.040	9,239.594	1.7	6,790.983	6,647.500	1.0
Average	309,931.746	62,259.802	5.0	116,787.901	57,031.589	2.0	47,836.626	46,161.944	1.0

20. The economic logic underlying the estimation of the cost of capital has important implications for the Commission's decision on whether to represcribe the authorized rate of return for the interstate services of local exchange carriers. If the Commission wants to encourage facilities-based competitive entry in the market for local exchange services, the authorized rate of return for local exchange carriers must be at least as large as the return potential competitors can earn on other investments of the same risk. If potential competitors can purchase local exchange services (including access) from the incumbent LECs at rates that include a ten percent rate of return on investment, for example, they will have no incentive to enter the market as facilities-based providers of local exchange services if they can earn returns greater than ten percent on other investments of comparable risk. To provide correct incentives for entry into local exchange markets, the Commission must measure the LECs' cost of capital in the same way that potential LEC competitors measure their own costs of capital.

[6] Data from Compustat, January 1999.

21. The Commission must likewise use a market definition of the cost of capital if it wishes to promote investment and innovation in telecommunications services. In competitive markets, the LECs and their competitors can only be encouraged to invest in new technologies, products, and services if the rate of return they can earn on the market value of their investments exceeds the rate of return they could earn on the market value of other investments of the same risk.

VI. The LECs' Cost of Capital Likely Exceeds the Currently Authorized 11.25 Percent.

22. In its last prescription order, the Commission prescribed a rate of return of 11.25 percent for those LECs subject to rate of return regulation. The Commission's order specifies that the 11.25 percent authorized rate of return is based on an 8.8 percent embedded cost of debt, a book value capital structure containing 44.2 percent debt and 55.8 percent equity, and a cost of equity in the range 12.5 percent to 13.5 percent. Using the specified cost of debt and book value capital structure, along with the authorized 11.25 percent rate of return, the cost of equity implied by the 11.25 percent authorized return is 13.19 percent, as shown in Table 2.

Table 2

Component	Cost Rate	Percent	Weighted Cost
Cost of Debt	8.80%	44.2	3.89
Cost of Equity	13.19%	55.8	7.36
Total			11.25

Since the time of the last prescription, the market cost of debt has declined to approximately 7 percent. At present, the average market value capital structure of the large telecommunications companies contains approximately 20 percent debt and 80 percent equity.[7] This capital structure

[7] The average level of equity in the telecommunications companies' capital structures for the last five years is also approximately 80 percent.

is similar to the average market value capital structures of the S&P Industrials and the large interexchange carriers, as shown in Table 3.

Table 3[8]

Company Group	Market Value	Total Debt	Percent Equity
S&P Industrials	6,623,584	1,437,373	82.2%
S&P Compustat Telecom Companies	705,936	142,348	83.2%
RHCs and GTE	368,618	82,269	81.8%
AT&T and MCI	191,916	28,112	87.2%

Using a 20 percent debt/80 percent equity market value capital structure, the currently authorized 11.25 percent cost of capital implies a cost of equity of approximately 12.3 percent, as shown in Table 4.

Table 4

Component	Cost Rate	Percent	Weighted Cost
Cost of Debt	7.00%	20.0	1.40
Cost of Equity	12.31%	80.0	9.85
Total			11.25

Thus, the Commission would have to find that the LECs' cost of equity is less than 12.3 percent in order to justify lowering its current authorized 11.25 percent rate of return. That the cost of equity could have declined by 90 basis points (13.2 percent – 12.3 percent = .90) is highly unlikely given the dramatic increase in risk that has occurred since the time of the last prescription.

VII. The LECs' Investment Risk Has Increased Significantly Since The Last Prescription.

23. In assessing whether the LECs' cost of equity is likely to be less than the 12.3 percent required to produce an 11.25 percent overall rate of rate of return, the Commission should consider not only the course of interest rates since the last prescription, but also the vast

[8] Data as of September 30, 1998, from Compustat, January 1999.

changes in the telecommunications industry that have increased the risk of investing in the LECs' local exchange operations. The increased risk of investing in the LECs' local exchange operations is a direct result of: (1) increases in operating leverage; (2) increases in the level of competition; (3) rapidly changing technology, and (4) asymmetric regulation.

24. The provision of facilities-based telecommunications services is a business that requires a large commitment to fixed costs in relation to variable costs, a situation called high operating leverage. The relatively high degree of fixed costs in the provision of facilities-based telecommunications service exists because of the average LECs' large investment in fixed assets such as central office, transport, and loop facilities. The average LECs' operating leverage has increased since the time of the last prescription as a result of their increased investments in the fixed facilities and software required to provide interconnection and unbundled network elements to competitive local exchange carriers ("CLECs"). Increased operating leverage increases the sensitivity of the LECs' net income to fluctuations in revenues.

25. Competition for local exchange service has also increased dramatically since the time of the Commission's last prescription. Hundreds of competitors have now been certificated to operate as CLECs throughout the country. These CLECs have invested billions of dollars to wrest market share from incumbent LECs. Investors are optimistic about the likely outcome of the CLECs' investments.

26. Increased competition in the local exchange markets is well documented. The Common Carrier Bureau's recently issued report, "Local Competition," states that by the end of 1997, (1) CLECs' revenues increased to $3 billion, from $1.5 billion in 1996; (2) CLECs offer 14 percent of the total special access and local private line services provided to other carriers, and six percent of such services provided to end users; (3) CLECs now have at least 11 percent

of the total fiber optic capacity available to carry local calls; (4) CLECs have acquired numbering resources in every state except West Virginia; and (5) CLECs have signed collocation arrangements in ILEC switching centers serving approximately 32 percent of voice-grade customer lines in the country.[9]

27. Recent analysts' reports confirm that the CLECs' strong penetration of the local exchange market accelerated in 1998. According to Salomon Smith Barney, CLEC penetration of the local exchange market reached a "watershed" in the first quarter of 1998: the CLECs added more new business lines than the RBOCs.[10] During the second quarter 1998, CLECs took a 28 percent share of total access line net adds, up from the 22 percent share during the first quarter 1998.[11] By the close of the third quarter 1998, CLECs provided service to more than 3.7 million business lines, which represent approximately 6.7 percent of the 55 million business lines in service.[12] The CLECs' penetration rates in the local exchange are substantially higher than the penetration rates of AT&T's competitors during a comparable period following the removal of entry barriers in the interexchange market.

28. Dramatic as the growth of CLEC revenues and market share may be, current market share statistics are nonetheless a poor indicator of competitive risks in the local exchange market. An incumbent's current market share reflects its historical position as the franchised provider of local exchange services in its service territory. The privileged position of the incumbent as the franchised provider has been eliminated. Investors' perception of risk depends on expected future competition, not current competition as reflected in market share.

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[9] "Local Competition," Industry Analysis Division of the Common Carrier Bureau, Federal Communications Commission, December 1998.
[10] "CLECs Surpass Bells in Net Business Line Additions for First Time," Salomon Smith Barney, May 6, 1998.
[11] "Competitive Local Exchange Review: Continued Strong Growth Momentum," JP Morgan, August 14, 1998.
[12] "CLECs Third Quarter Review," PaineWebber, November 13, 1998, p. 2.

29. In regard to expected future competition, investors are aware that analysts forecast tremendous gains for the CLECs. According to the Yankee Group, total CLEC revenues will grow from $3.8 billion in 1997 to $26.0 billion by 2001. PaineWebber forecasts that CLECs will capture 40 to 50 percent of business access lines by 2007.[13] With respect to the residential market, a customer survey conducted for Morgan Stanley indicates that "AT&T would take 42 percent share in a competitive market for local and long distance residential customers."[14] Investors are also aware that AT&T and MCI WorldCom are implementing strategies to take considerable market share from the LECs. As part of their strategies, AT&T and MCI WorldCom have dramatically increased their investments in the local exchange market. Within the past two years, WorldCom paid $14 billion for one CLEC, MFS, $2.9 billion for another CLEC, Brooks Fiber; and $37 billion for MCI, at least in part because WorldCom placed a high valuation on MCI's local exchange facilities. AT&T paid $11.3 billion to purchase Teleport, the largest CLEC in the industry at the time, and has offered $48 billion for TCI, the second largest multiple systems cable operator in the country. Teleport currently operates in the nation's top 66 markets, with 9,400 fiber route miles, 41 local switches, 5,000 on-net buildings, 13,500 buildings passed, and 490,000 business lines in service; and TCI currently provides cable TV service either directly or indirectly (that is, through affiliates) to approximately 20.5 million subscribers. In addition, TCI's cables pass approximately 49 million homes, one-third of the homes in the United States.[15]

30. The $11.3 billion acquisition of Teleport and the $48 billion acquisition of TCI will give AT&T a tremendous boost in its efforts to provide a complete package of long

[13] "Telecommunications Services," PaineWebber, July 27, 1998, p. 7.
[14] "Telecommunications Services," Morgan Stanley Dean Witter, August 11, 1997, p. 3.
[15] *Local Competition Report*, Vol. 7, No. 2, January 19, 1998, page 1, and "At Last, Telecom Unbound," *Business Week*, July 6, 1998, pp. 24--31.

distance, wireless, Internet access, and local exchange services to business and residential customers throughout the country. In addition, AT&T's President Mr. Armstrong has expressed his intention for AT&T to reach agreements with other cable providers so that AT&T can provide local service through direct connections to 50 million of its 90 million customers by the end of 1999.[16] To further this goal, AT&T has recently announced that it will spend an additional $2 billion in 1999 to more quickly upgrade TCI's cable systems to handle packages of TV, local phone, and Internet services. AT&T hopes to complete the upgrade of TCI's cable systems by 2000.[17]

31. Investors are also aware that AT&T and other carriers are preparing to offer local exchange service through mobile wireless technologies. AT&T is the largest provider of cellular service in the U. S., and potentially the largest provider of PCS services in the country. Numerous analysts highlight the growing worldwide acceptance of wireless as a substitute for wireline service.[18] According to a Deutsche Morgan Grenfell report, the "widely held assumption of 10—15 years ago" that wireless mobility poses no threat to the wireline network "is now almost certainly wrong."[19] A recent Deutsche Bank Research report confirms that "wireless telephones are becoming a credible wireline bypass vehicle" and a "wireline replacement product."[20] Other analysts predict that a fourth of current wireline customers will shift exclusively to wireless by 2002; and by 2007, they predict that half of current wireline customers will shift exclusively to wireless.[21]

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[16] "AT&T Board to end Year With Talks on Cost Cuts, Possibly Huge Investments," *The Wall Street Journal*, December 17, 1997, p. B6.)
[17] "AT&T Widens Local Service Phone Plans," *The Wall Street Journal*, January 11, 1999.
[18] *The Economist*, September 12, 1998.
[19] "Investing in a World Without Wires," Deutsche Morgan Grenfell, September 18, 1997.
[20] "Investing in a World Without Wires," Deutsche Bank Research, November 13, 1998, p. 2.
[21] "The Communications Battleground," p. R4, *The Wall Street Journal Special Report on Telecommunications*, September 11, 1997.

32. Rapid advances in telecommunications technology are the third major driver behind the increasing risk of investing in the LECs' local exchange operations. Advances in semiconductor technology have both increased the capability and lowered the cost of telecommunications equipment, so other firms can compete more easily with local exchange companies. Breakthroughs are also occurring in fiber optic, data communications, and wireless technologies. The capacity of fiber optic networks is increasing dramatically, thus allowing fiber-based competitive access providers to offer more services. Recent advances in data communications and Internet protocol technologies, especially technologies for transporting voice signals over data communications networks, offer yet another opportunity for bypassing the local loop. Sprint recently announced plans to offer local exchange services over a new nationwide packet-switched data network. New data networking and Internet protocol technologies are also the major factors reducing the cost of providing local exchange services over cable networks. AT&T has announced its intention to rely on these technologies in its upgrade of the TCI network. Wireless technology is also changing rapidly. Analysts anticipate that AT&T's new fixed wireless technology will allow AT&T to completely bypass the local loop in areas not served by its recently acquired cable TV facilities. In sum, technological developments have substantially eroded the competitive advantage once enjoyed by local exchange companies.

33. Rapidly changing technology increases the LECs' risk in at least two ways. First, it threatens their ability to recover the investment cost of its new telecommunications plant. Second, it reduces the cost of entry for competitors. Rapid advances in fiber optics, wireless, and multimedia transmission technologies, for example, have shortened the economic lives of the LECs' current investments in copper-based facilities and allowed cable TV, interexchange,

and wireless companies to compete efficiently to offer local exchange service. Advances in these technologies further threaten the LECs' heavy investment in landline telecommunications service.

34. Asymmetric regulation is the fourth major driver of the LECs' increased risk since the time of the last prescription. Investors are aware that the LECs' face a number of disadvantages in their efforts to compete in a fully competitive local exchange market. First, incumbent LECs have the obligation to provide telecommunications services to all customers, even those whose rates fail to cover the cost of providing service. Telecommunications prices have historically been set to provide subsidies to high-cost customers in low density geographic areas. Such subsidies are inconsistent with the competitive framework of the Telecommunications Act of 1996 ("the Act"). In truly competitive markets, there are no sources to subsidize prices that are lower than cost. Investors are concerned that the universal service support mechanisms that will be put in place may not be sufficient to balance the incumbent LECs' obligation to continue to provide service in high-cost areas, while competitors are free to serve only the most profitable markets.

35. Second, the LECs are required by the Act to provide unbundled network elements and interconnection services to competitors, while competitors have no similar obligation to provide unbundled network elements and interconnection services to the LECs or others. Thus, under the current state of affairs, unlike their competitors, the LECs can never obtain a competitive advantage from investments in new technologies. For example, if AT&T is able to provide a complete package of video, Internet, and voice services from its investments in TCI, AT&T will have a significant competitive advantage compared to LECs who are unable to offer such bundled services. However, if the LECs are able to enhance the local portion of their

service offerings through upgrades of their networks, they are required to share these benefits with all competitors, including AT&T.

36. The above evidence indicates that the risk of investing in the LECs' local exchange operations has increased dramatically since the time of the Commission's last prescription. There can be little doubt that investors demand a higher return in compensation for increased risk. Although interest rates have declined since the time of the Commission's last prescription, it is highly unlikely that the cost of equity could have decreased by more than 90 basis points at the same time that risk has increased so dramatically. Indeed, it is more likely that the cost of equity has increased since that time.

VIII. Conclusion

37. The proposed book value method for estimating the LECs' weighted average cost of capital is inconsistent with both: (1) the market value definition of the weighted average cost of capital required by economic theory and market participants; and (2) the Commission's goal of providing correct economic signals for entry, investment, and innovation decisions in telecommunications markets. The evidence is overwhelming that capital market participants use market values rather than book values to measure their required rate of return on investment. Reasonable estimates of the LECs' cost of capital, using an economically correct definition of the cost of capital, are likely to exceed the Commission's currently authorized 11.25 percent rate of return for the LECs. Since the Commission's ultimate goal is to promote efficient entry in telecommunications markets, it should let the capital markets determine the LECs' rate of return on investment.

STATE OF NORTH CAROLINA)
)
COUNTY OF DURHAM)

James H. Vander Weide, being first duly sworn, deposes and says that he has read the foregoing affidavit of James H. Vander Weide, and that the matters and things set forth therein are true and correct to the best of his knowledge, information, and belief.

James H. Vander Weide

Subscribed and sworn to before me this 12 day of JANUARY, 1999.

Carol N Lowans
Notary Public In and For the State of North Carolina

My commission expires on 12-2-2001.

Appendix B

Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington D.C. 20554

In the Matter of	)	
	)	
Prescribing the Authorized	)	CC DOCKET NO. 98-166
Unitary Rate of Return for	)	
Interstate Services of Local	)	
Exchange Carriers	)	

AFFIDAVIT OF PETER C. CUMMINGS IN SUPPORT OF COMMENTS OF U S WEST, INC.

January 19, 1999

AFFIDAVIT OF PETER C. CUMMINGS
INDEX OF AFFIDAVIT

EXHIBITS

EXECUTIVE SUMMARY
AFFIDAVIT OF PETER C. CUMMINGS

My name is Peter C. Cummings and I am employed by U S WEST Communications, Inc. (USWC) as Director-Finance and Economic Analysis. My job responsibilities include financial analysis of the capital costs and capital structure of U S WEST Communications. I develop cost of capital estimates for company cost studies, capital budgeting, and economic analysis. I also testify in state rate cases on rate of return, capital structure, and other financial issues. As an adjunct to U S WEST's Direct Case submission in Docket CC-98-166, I have prepared this affidavit to explain why a forward looking cost of capital is appropriate for the purposes of this docket and to explain how the forward looking weighted average cost of capital is estimated.

The forward looking weighted average cost of capital (or incremental cost of capital) is the firm's current borrowing rate and expected rate of return on the firm's stock weighted by the market values of currently outstanding debt and equity. The incremental cost of capital is different from the cost of capital authorized by regulatory Commissions in setting revenue requirements in rate cases. A Commission authorized return uses the company's regulatory book value capital structure and embedded cost of debt. The incremental cost of capital calls for the market value capital structure and the projected costs of issuing new debt and new equity financing.

The local exchange telephone industry is no longer a monopoly and thus the special case paradigm of finance is no longer applicable. The so-called "fair return" based on book values of capital and embedded costs is not fair because the industry participants are not uniformly regulated. The introduction of competition has severed the linkage between market economics and regulatory accounting – regulation is no longer a substitute for market economics. For all telecommunications companies, including those over which the FCC still retains vestiges of regulatory control in the form of price caps or unitary rate of return, the relevant cost of capital is the forward looking cost of capital -- the cost of capital associated with new investment.

As a financial economist, I believe that market forces are the most efficient and fairest allocator of resources and I believe the FCC's public policy interests would be best served by forgoing the prescription of a unitary rate of return and letting competitive market forces allocate capital. If the Commission proceeds to prescribe an authorized unitary rate of return as outlined in the NPRM, I suggest that the Commission set its focus on new investment required to provide interstate access services. New capital in the form of debt and equity will be raised by the local exchange carriers to finance these investments and the financially correct cost of capital is the market determined costs of new debt and new equity financing weighted by the relative market values of the firms' outstanding debt and equity capital.

I. IDENTIFICATION OF WITNESS

I, Peter C. Cummings, first being duly sworn, hereby state that the following information is true and correct to the best of my knowledge, information and belief.

My name is Peter C. Cummings and my business address is 1600 Bell Plaza, Seattle, Washington 98191. I am employed by U S WEST Communications, Inc. (USWC) as Director - Finance and Economic Analysis. My responsibilities include financial analysis of the capital costs and capital structure of U S WEST Communications, Inc. I develop cost of capital estimates for company cost studies, capital budgeting, and economic analysis. I have testified in numerous state rate cases on behalf of the company on rate of return, capital structure, and other financial issues. I began my telecommunications career at Northwestern Bell in 1969 and have held positions in Operator Services, Marketing, and Finance departments at Northwestern Bell, Pacific Northwest Bell, and U S WEST Communications. For the last twelve years, my job responsibilities have been focused on cost of capital and rate of return.

I have a B.A. degree from Bemidji State College in Minnesota, a Master of Public Administration Degree from the University of Oklahoma and a Master of Business Administration Degree from Creighton University in Omaha, Nebraska. I am a Chartered Financial Analyst (CFA) and a member of the Association for Investment Management and Research (AIMR), the Financial Management Association, and the Seattle Society of Financial Analysts.

II. PURPOSE OF AFFIDAVIT

The purpose of my affidavit is to explain why a forward looking cost of capital is appropriate for the purposes of this docket and to explain how the forward looking cost of capital is estimated.

III. FORWARD LOOKING COST OF CAPITAL

THEORY AND PRACTICE

The cost of capital (sometimes called the cost of money) is a well established concept in Finance and we can look to that discipline for practical guidance on how to estimate the cost of capital and how to use it for capital budgeting, investment analysis, performance evaluation, project selection, cost studies, etc.

In Finance, the forward looking cost of capital is an application of the firm's **weighted average cost of capital** or alternatively called the firm's **marginal or incremental cost of capital**. All of these terms are synonymous in conveying the concept of a forward looking cost of capital. In their well known finance text, Professors Brealey and Myers explain the weighted average cost of capital. Their formula says that the weighted average cost of capital is equal to the proportion

of debt times the after tax borrowing rate plus the proportion of equity times the expected rate of return on the firm's stock. The professors state:[1]

> We refer to the *weighted-average cost of capital*. Sometimes we call it the *textbook formula*, since many other textbooks have put heavy emphasis on it. The formula is
>
> $$r^* = r_D (1 - T_c) \frac{D}{V} + r_E \frac{E}{V}$$
>
> where:
>
r^*	=	the adjusted cost of capital [weighted average cost of capital]
r_D	=	the firm's current borrowing rate
T_c	=	the marginal *corporate* income tax rate
r_E	=	the expected rate of return on the firm's stock (which depends on the firm's business risk and its debt ratio)
D,E	=	the market values of currently outstanding debt and equity
V	=	D + E

There are several key features of this textbook formula for the weighted average cost of capital which I want to highlight. The formula uses the firm's **current** borrowing rate, the **expected** rate of return on the firm's stock, and the **market** values of currently outstanding debt and equity. Along with the marginal tax rate, these features define the company's forward looking cost of capital. The forward looking cost of capital is a weighted average of the opportunity costs of the company's financing sources. This weighted average cost of capital is the proper input for forward looking cost modeling.

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[1] Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, 4th Ed; New York: McGraw-Hill, Inc.; 1991, page 465.

Here is an illustration of the weighted average cost of capital concept which comes from a text in the Financial Management Association Survey and Synthesis Series:[2]

> Suppose you must decide whether to accept or reject a proposed project. Your team of analysts has provided you with the project's estimated cash flows. To determine the value of the project, you will find the present value of the future cash flows and compare this with the initial cash outlays [using a discount rate appropriate for this project]. ...
>
> How do you choose the discount rate? First, you estimate the current cost of each source of funds; this is not the historical cost of the capital you have already raised, but instead the marginal cost of any incremental funds that you will raise. Second, you find the weighted average of the costs of these separate sources of capital, with the weights based on the market values of the sources of financing. The result is the "weighted average cost of capital" [footnote: Strictly speaking, this should be called the "market weighted average of the marginal costs of capital."] You should use this weighted average cost of capital to discount the appropriate after-tax cash flows of the project. ...
>
> This weighted average cost of capital is often called the "traditional" cost of capital, because analysts have used it for at least 30 years. It is also called the "textbook" cost of capital because many textbooks discuss it.

It is useful to contrast the weighted average cost of capital with authorized returns under traditional regulation. The forward looking weighted average cost of capital is markedly different from a Commission authorized return, even though the terms of "debt", "equity", "cost of capital" and "capital structure" are common to both.

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[2] Michael C. Erhardt, The Search For Value: Measuring the Company's Cost of Capital, Boston,MA: Harvard Business School Press, 1994, pp. 9-10.

The Commission authorized return uses the company's **embedded** cost of debt; that is, the historical cost of debt from the company's books. The weighted average cost of capital calls for the company's **current** or **incremental** cost of new debt.

The Commission authorized return uses the company's regulatory **book value** capital structure. The weighted average cost of capital calls for the **market values** of debt and equity.

The Commission authorized return and the weighted average cost of capital have only one parameter in common -- the **expected** rate of return on the company's stock or equity capital. Even with this common parameter, the Commission authorized equity return may not adequately reflect the true opportunity cost of equity financing due to timing issues, regulatory lag, and political or policy considerations.

The Financial literature recognizes the distinction between the weighted average cost of capital and a Commission allowed cost of capital. In a chapter devoted to cost of capital for regulated companies, Professor Erhardt contrasts the weighted average cost of capital and the allowable cost of capital, first describing the role of cost of capital in the regulatory process of setting customer rates:[3]

[3] Ibid., page 166.

In a typical rate case hearing, a necessary step is the establishment of a rate base. This rate base is usually the sum of the book values of debt and equity. The next step is to estimate the components of the allowable cost of capital. The cost of debt is the weighted average of the coupon rates on all of the company's existing debt. This historical pre-tax cost of debt is frequently called the "embedded cost of debt." The Commission also establishes an allowable cost of equity.

> *The allowable weighted average cost of capital equals the percent book equity of total book value capital times the allowable cost of equity plus the percent book debt of total book value capital times the historical cost of debt.*

The Commission multiplies the allowable cost of capital by the rate base to determine the allowable revenues. The Commission adds tax expenses, estimated production costs, and other expenses to these revenues. The resulting figure is analogous to the net sales of a manufacturer. The commission divides this figure by the forecasted demanded quantity and the result is allowable price.

This might be an appropriate process for regulators, because the objective of the regulatory commission is to determine the allowable price. Yet this allowable cost of capital is different from the weighted average cost of capital.

Erhardt then goes on to discuss the differences between the weighted average cost of capital and the allowable cost of capital:[4]

Chapter 2 defines the weighted average cost of capital as:

> *The Weighted Average Cost of Capital equals the percent equity market value of total market value times the cost of equity plus the*

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[4] Ibid., page 167.

percent debt market value of total market value times the current rate at which you could issue debt.

One obvious difference is the use of book weights for the allowable cost of capital and market weights for the weighted average cost of capital. ...

A second difference between the allowable cost of capital and the weighted average cost of capital is the interest rate. The interest rate for the allowable cost of capital is the embedded historical rate, not the current rate.

IV. THE UNITARY RATE OF RETURN SHOULD BE THE FORWARD LOOKING COST OF CAPITAL

The forward looking cost of capital based on market value weights of debt and equity financing is the standard case of Finance. The forward looking cost of capital is integral to financial theory and it is what is used in the practice of corporate finance.

Rate base, rate of return regulation has employed a special case paradigm of Finance. In regulation of monopoly providers of essential services, accounting rules were developed to set prices to be charged to consumers. In this environment, regulators controlled the services provided, company participation, including entry and exit provisions, and pricing of services to consumers. Extending this regulatory paradigm to serve as a surrogate for competitive market forces, regulation also seeks to control expenditures, investment, and profitability of the companies. This special case paradigm of finance for regulation is cost based pricing which sets prices to cover allowable expenses plus a fair return on invested capital (the rate base). For the

local telecommunications industry, the heritage of a tightly regulated environment where all participant companies were subject to the same regulation, produced special accounting conventions which still prevail today, even though the tightly regulated environment has been opened to competition.

For cost based pricing in a true monopoly regulated environment, the rate base investment is accounted for on an original cost less accumulated depreciation basis. Similarly, debt and equity investment is recorded on the company's regulated accounting books at original or "book" value, and a "fair" return on invested capital is set equal to the embedded or historical cost of debt times the book value of debt plus a fair return on equity capital times the book value of equity. For companies operating in true monopoly markets where all industry participants are similarly regulated and there are no unregulated substitutes for the monopoly services, this concept of a "fair return" works reasonably well.

The local exchange telephone industry is no longer a monopoly and thus the special case paradigm of finance is no longer applicable. The so-called "fair return" based on book values of capital and embedded costs is not fair because the industry participants are not uniformly regulated. The introduction of competition has severed the linkage between market economics and regulatory accounting – regulation is no longer a substitute for market economics. For all telecommunications companies, including those over which the FCC still retains vestiges of

regulatory control in the form of price caps or unitary rate of return, the relevant cost of capital is the forward looking cost of capital -- the cost of capital associated with new investment.

All companies need to estimate their cost of capital in order to do business. The cost of capital is needed for capital budgets, project selection and evaluation, operations analysis, and profitability and shareholder value assessment. The cost of capital is established by investors weighing the decision to invest or not invest in particular companies. In the company and investment environments there is no incentive to try to bias the cost of capital estimate either higher or lower – market efficiency will ruthlessly punish those actions.

As a financial economist, I believe that market forces are the most efficient and fairest allocator of resources and I believe the FCC's public policy interests would be best served by forgoing the prescription of a unitary rate of return and letting competitive market forces allocate capital. I agree with Commissioner Furchtgott-Roth's dissenting opinion that "today's proceeding merely perpetuates an outmoded form of regulation," and that, "In today's increasingly competitive environment, the Commission should be focusing its efforts on transitioning to a more competitive environment for both rate of return and price cap LECs."[5] If the Commission proceeds to prescribe an authorized unitary rate of return as outlined in the NPRM, I offer the following considerations for estimating the forward looking cost of capital.

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[5] NPRM *Authorized Unitary Rate of Return,* CC Docket 98-166, Dissenting Opinion of Commissioner

V. ESTIMATING THE FORWARD LOOKING COST OF CAPITAL

The cost of bonds and stocks, debt and equity, is established by the capital markets. It is the actions of investors buying and selling securities in the financial markets that determine their prices. The prices paid by investors for a company's stocks and bonds determine the economic value of the company. It's the economic or market value of the company that matters to investors, not the accounting value or book value. When you put your home for sale on the real estate market, only the market value matters – the book value of your home is not relevant. Information and data from the capital markets coupled with financial theory and financial models are necessary to estimate the forward looking cost of capital.

Cost of New Debt

For the current or incremental cost of borrowing, the cost of new financing should be used. The cost of new debt financing depends upon the general level of interest rates, the credit quality of the company, and the maturity, terms, and conditions of the financing. U.S. Treasury bond and note yields proxy the general level of interest rates, and credit quality is a function of the additional

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Harold Furchtgott-Roth.

yield required for investors to purchase corporate bonds instead of Treasury bonds. Market yields plus underwriters fees and other issuance costs for comparable new debt issues can be used to estimate the incremental cost of debt.

Cost of New Equity

For the expected rate of return on the company's preferred stock or equity, market data for comparable preferred stock issues plus underwriters fees and issuance costs can be used to estimate the incremental cost of preferred stock financing.

For the expected rate of return on the company's stock or equity I recommend using Discounted Cash Flow (DCF) and Capital Asset Pricing Model (CAPM) models applied to industry and comparable risk groups of companies. The cost of equity estimates should be checked for reasonableness against an estimate of investors' expected return on the stock market as a whole.

Capital Structure

Consistent with the financial theory on incremental costs of capital, the marginal costs of debt and equity should be weighted using the company's market value capital structure. The market value of equity is the number of shares outstanding times the price per share. The market value of debt is the sum of the market values of each of the company's long term debt issues, capital leases, and short term debt. For most firms with active debt financing programs and stable bond ratings the market value of debt is usually very close to the book value of debt and the book value of debt may be substituted for the market value of debt in estimating the weighted average cost of capital:[6]

> For healthy firms the market value of debt is usually not too far from book value, so many managers and analysts use book value for *D* in the weighted-average cost-of-capital formula. However, be sure to use *market*, not book values for *E*.

Professor Erhardt also notes that the market and book values of debt are often similar, but like Brealey and Myers, cautions that the market and book values of equity are usually different.[7]

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[6] Richard A. Brealey and Stewart C. Myers, Op Cit, page 465.

[7] Michael C. Erhardt, Op Cit, page 75.

> Market values of debt sometimes are different from book values of debt, although not usually to the extent that market equity differs from book equity. When market interest rates are relatively stable, the coupon rate on newly issued debt will often be similar to the rate on previously issued debt. Unless the creditworthiness of the firm has changed, the market and book values of debt will be very close.

For the market value capital structure, the best approach is to use the market values of both debt and equity. For convenience, the book value of debt may be used as a surrogate for the market value of debt, but the book value of equity cannot be used as a surrogate for the market value of equity due to the myriad of accounting and economic differences between equity market and book values.

VI. COMMENTS ON NPRM COST OF CAPITAL ISSUES

The NPRM seeks comment on issues related to cost of capital estimation and the following are my recommendations related to capital structure, debt cost, and equity cost.

Capital Structure

Consistent with it's *1995 Rate of Return Represcription Order*, the Commission in NPRM Appendix B calculates the ILECs capital structure based on 1997 data from ARMIS reports for ILECs with annual revenues of $100 million or more. The ARMIS data from Appendix B provides an

accounting book value capital structure which is not related to the economic value of the local exchange carriers and is not relevant to their forward looking cost of capital. As explained above, the market values of debt and equity should be used in weighting the costs of debt and equity.

Since market values are not readily available for all ILECs, I recommend that an average of market value capital structures for large telecommunications companies or the average market value capital structure for the Standard & Poor's 500 companies be used as a surrogate for the ILEC market value capital structure. Exhibit PCC-1 shows large LEC telecommunications companies capital structures which average 19.9% debt / 80.1% equity. The Standard & Poor's 500 companies capital structures which average 20.6% debt / 79.4%.

Cost of Debt and Preferred Stock

The NPRM at paragraphs 12, 13, and 14 discusses the embedded cost of debt. The embedded cost of debt is the cost of previously issued debt on a company's accounting records. The cost of new debt may be higher or lower than the embedded cost of debt depending upon economic conditions. It is the cost of new debt; i.e., the current market required return for new debt issues plus issuance costs that is relevant to the cost of capital. Market yields plus underwriters fees and other issue costs for comparable new issues can be used to estimate the current cost of debt. U S WEST, GTE North, and Sprint have recently issued new debt and the

yield spreads between these issues and comparable maturity U. S. Treasury securities can be used to estimate the current cost of debt.

Similarly, the cost of preferred stock financing can be estimated by reference to recent issues by other companies. The preferred stock embedded cost calculation proposed in the NPRM at paragraphs 15 and 16 does not provide the economic value or market weighting of preferred stock capitalization.

Cost of Equity

The NPRM at paragraphs 17 and 18 seeks comment on methodologies for estimating the cost of equity capital. I believe that relying upon data for a single company or a single method to estimate the market required return weakens the reliability of the estimate. All estimation processes involve error, and the objective of making the best possible estimate is to minimize the error -- that is, to have the greatest confidence that the estimate is both valid and reliable. Using a group of comparable risk companies in the analysis minimizes the potential for estimation error. Professors Brealey and Myers recommend this approach in their corporate finance text:[8]

> Any estimate of *r* [cost of equity] for a single common stock is noisy and subject to error. Good practice does not put too much weight on single-

[8] Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, 5th Ed., New York: McGraw Hill, 1996, pp. 64-66.

> company cost-of-equity estimates. It collects samples of similar companies, estimates *r* for each, and takes an average. The average gives a more reliable benchmark for decision making. ... We have stressed the difficulty of estimating *r* by analysis of one stock only. Try to use a large sample of equivalent risk securities. Even that may not work, but at least it gives the analyst a fighting chance, because the inevitable errors in estimating *r* for a single security tend to balance out across a broad sample.

Ross, Westerfield, and Jaffe in another widely used text suggest an industry focus to estimate the cost of equity:[9]

> [S]ome financial economists generally argue that the estimation error for *r* [the cost of equity] for a single security is too large to be practical. Therefore, they suggest calculating the average *r* for an entire industry. This *r* would then be used to discount the dividends of a particular stock in the same industry.

Estimating the market required return requires expert and informed judgment and that judgment is best based upon broader market evidence because of the potential for error or bias in limiting the analysis to just one company.

It is appropriate to use more than one model because each of the methods employed provides useful information on the market required rate of return. For example, the Discounted Cash Flow (DCF) methodology uses the current market price and expected dividends. The Capital Asset Pricing Model (CAPM) method incorporates current interest rates and provides a measure of

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[9] Stephen A. Ross, Randolph W. Westerfield, and Jeffrey F. Jaffe, Corporate Finance, 2nd Ed., Homewood, IL: Richard D. Irwin, Inc., 1990, p. 123.

risk. Analysis of comparable companies provides direct evidence on market required returns for comparable risk firms -- firms that ILECs must compete with to obtain investor financing. Using multiple methods also provides a cross check on the market required return estimate. Results obtained from each method should define a useful range of return estimates to which judgment is applied.

There is no single model that conclusively estimates the market required return for an individual firm. Professor Stewart Myers says that only a fool throws away useful information to concentrate on a single model when there is other data available[10]

> Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, only a fool throws away useful information. That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data.

Other financial experts share similar conclusions: [11]

> In practical work, it is often best to use all three methods - CAPM, bond yield plus risk premium, and DCF - and then apply judgment when the methods

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[10] Stewart C. Myers, "On the Use of Modern Portfolio Theory in Public Utility Rate Cases": Comment, Financial Management, Autumn 1978, p. 67.

[11] Eugene F. Brigham and Louis C. Gapenski, Financial Management Theory and Practice, 4th Ed., Chicago: The Dryden Press, 1985, p. 256.

> produce different results. People experienced in estimating capital costs recognize that both careful analysis and some very fine judgments are required. It would be nice to pretend that these judgments are unnecessary and to specify an easy, precise way of determining the exact cost of equity capital. Unfortunately, this is not possible.

At paragraph 19, the NPRM notes, "we must select a group of companies facing risks similar to those encountered by the rate-of-return ILECs in providing interstate service for which we can estimate the cost of equity." The NPRM at paragraph 20 seeks comment on the relative riskiness of interstate access services and makes tentative conclusions about the level of such risk. I would caution against risk distinctions based upon anecdotal or non-quantitative distinctions. The preferred approach would be to analyze the interstate services market and directly determine risk measures that matter to investors, i.e. cash flow volatility and standard deviation of returns. Lacking quantitative data such as cash flow or return volatility, I would tentatively conclude that the investment risk of any business operation is similar to the investment risk of the market as a whole.

Discounted Cash Flow Methodology

The constant growth DCF model proposed by the Commission is a standard expression of one of the cornerstones of financial theory that the value of any asset is equal to the expected future cash flows to be derived from that asset. In that context, it is important to note that only current and future cash flows matter – past cash flows, embedded costs, and historical asset

values are not relevant to the cost of capital. Use of the constant growth DCF model requires acceptance of a number of assumptions[12] and its use is limited to analysis of companies that pay dividends.

Growth Rate

For growth rate inputs to the DCF model, the NPRM at paragraph 23 suggests use of the Standard & Poor's Analysts Consensus Estimates (ACE) instead of the more common approach of using growth rates from the Institutional Brokers Estimate System (IBES). Presumably this suggestion relates to administrative ease, as the Commission proposes to use S&P's Compustat PC Plus database as its source of modeling inputs. IBES has been in the business of collecting and disseminating analysts forecasts longer than other competing services and most of the academic research requiring growth rate estimates has been conducted using IBES data. Ultimately the selection of which service to use is a judgement which should be made relative to relevant criteria such as number of analysts, frequency of updates, procedures of maintaining integrity of data, etc.

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[12] These assumptions include:
Investors discount expected cash flows at the same rate in every future period.
Dividends constitute the source of value.
The discount rate exceeds the growth rate.
The dividend growth rate is constant in every future period.
Investors require the same growth rate in every future period.
The firm's risk does not change over time.

Quarterly Dividend

The Commission notes at paragraph 24 of the NPRM that it rejected ILEC arguments that quarterly dividends should be compounded to reflect payment of dividends on a quarterly rather than an annual basis for three reasons[13] and tentatively concluded that the Commission should not use quarterly compounding in the DCF formula. I urge the Commission to reconsider this tentative conclusion by placing its focus on cash flows to the investors and investors' return requirements. A DCF model which assumes one annual dividend payment does not reflect the reality of cash flows to investors and there is no need to make this abstraction from reality.

The timing of dividends is reflected in the current stock price. A stock paying four quarterly dividends is worth more than one paying a single annual dividend. This is similar in concept to the adjustment made in bond yield calculations to reflect that interest is paid twice a year. The timing

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13 (1) The compounding is reflected in the revenue requirement because the Commission uses a mid year rate base.
(2) The adjustment adds a complexity that is not offset by increased accuracy.
(3) The parties did not establish that analysts and investors actually use quarterly compounding models nor did the parties demonstrate how using the quarterly model may affect the market price.

and reinvestment of dividend payments must be considered in determining the return on a stock as illustrated in the following section from a current text on corporate finance: [14]

> We have ignored the question of when during the year you receive the dividend. Does it make a difference? To explore this question, suppose first that the dividend is paid at the very beginning of the year, and you receive it the moment after you have purchased the stock. Suppose, too, that interest rates are 10 percent, and that immediately after receiving the dividend you loan it out. What will be your total return, including loan proceeds, at the end of the year?
>
> Alternatively, instead of loaning out the dividend you could have reinvested it and purchased more of the stock. If that is what you do with the dividend, what will your total return be? ...
>
> Finally, suppose the dividend is paid at year end. What answer would you get for the total return?
>
> As you can see, by ignoring the question of when the dividend is paid when we calculate the return, we are implicitly assuming that it is received at the end of the year and cannot be reinvested during the year. **The right way to figure out the return on a stock is to determine exactly when the dividend is received and to include the return that comes from reinvesting the dividend in the stock.** This gives a pure stock return without confounding the issue by requiring knowledge of the interest rate during the year.

During the course of a year, the stock investor has the value of the 1st quarter dividend for 3/4th's of the year; the 2nd quarter dividend for 1/2 of the year; the 3rd quarter dividend for 1/4th of

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[14] Stephen A. Ross, Randolph W. Westerfield, and Jeffrey F. Jaffe, Corporate Finance, 2nd Ed., Homewood, IL: Richard D. Irwin Inc., 1990, p. 230. [emphasis added]

the year, and the 4th quarter dividend that is received at the end of the year. Stocks are priced in the market consistent with the pure stock return described above. A quarterly compounding DCF model accurately models the cash flows to the investors. If companies suddenly shifted from paying quarterly dividends to paying a single annual dividend (as is assumed in the annual DCF model favored by the Commission), investors would lose the reinvestment return, stock prices would fall, and the investors' market required return would rise.

Flotation Costs

The Commission notes at NPRM paragraph 25 that "Flotation costs are the out-of-pocket expenses associated with issuing stock as well as any temporary reduction in the market value of the stock attributable to the issuance of additional shares." The Commission goes on to conclude that, "in this proceeding, we should make no adjustment s to our estimate of the cost of equity component of ILECs cost of capital to compensate for flotation costs."

Stock flotation costs are real and they need to be addressed in the financing and capital budgeting of all companies, regulated and non-regulated. The following citation summarizes the key concepts of two basic methods to account for flotation costs. The investment adjustment (IA) method recovers flotation costs from specific projects and the cost of capital adjustment (CCA)

method recovers flotation costs over the life of the capital through an increase in the firm's cost of capital. [15]

> "The cost of raising external equity capital can amount to 20 percent or more of gross proceeds for small companies, and even for large industrial firms equity flotation costs are generally close to 5 percent. Debt and preferred stock flotation costs, although generally much smaller than equity flotation costs, are not insignificant. Two basic methods have been proposed to take account of flotation costs in the capital budgeting process: (1) the "investment adjustment" (IA) method, where each project's cost is increased by the amount of flotation costs incurred to finance it, and (2) the "cost of capital adjustment (CCA) method, where flotation costs are accounted for by increasing the firm's cost of capital. ... As one might suspect, the two methods differ in assumptions. The IA method assumes that flotation costs associated with a given project must be recovered during the life of the project, which implies that capital is raised for that project alone. Conversely, the CCA method assumes that flotation costs will never be recovered which implies that capital raised will be used by the company forever. ...
>
> It is not possible to state unequivocally that one method is better than the other--which one is better depends upon the actual conditions facing a given firm. If the project is a "one-time-shot" by a new firm that will go out of existence at the end of the project's life, then it should be evaluated by the IA method. On the other hand, if the firm is expected to reinvest the capital raised for this year's projects in later years, then use of the CCA method will lead to value maximization. ...
>
> Under the IA method, flotation costs must be recovered over the life of the project being evaluated. If the initial project's cash flows are not sufficient to permit full recovery of flotation costs, the project will be rejected. ...

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[15] Eugene F. Brigham and Louis C. Gapenski, "Flotation Cost Adjustments" Financial Practice and Education Fall/Winter 1991 pp. 29-34.

> Under the CCA method, it is assumed that the capital raised will be reinvested within the firm continuously after the first project, so flotation costs are amortized over the life of the firm, which is assumed to be infinite. Therefore, (1) the "amortization charge" per year is zero, (2) no individual project is required to produce enough cash to recover the flotation costs, but (3) the initial project and all follow on projects must be expected to provide a return at least equal to the flotation-adjusted cost of capital. The essential difference between the two methods is the assumption concerning the recovery of flotation costs. Should the project that incurs the flotation costs be charged the full amount of those costs, or should the cost be amortized over all projects that utilize a common set of investor-supplied funds?"

Since capital is continually reinvested by ILECs for the provision of interstate services, I suggest that the CCA (Cost of Capital Approach) is the proper way to deal with stock issuance costs. Another way to look at this issue is to understand that the cost of financing (i.e. the bond yield or equity return cost) to a company is always greater than the market return or yield required by the investor. This is because the company receives less net proceeds from a security issue than what the investor supplies – the difference is issuance expenses or flotation costs. Here is an example to illustrate the situation:

A company sells 1 million shares of stock at $25 ($25,000,000) to investors who are expecting a 12% annual return. ($3 per share or $3,000,000 total).

In issuing the new stock, the company incurred expenses for underwriting commissions, legal fees, stock certificate printing, etc. of $750,000, or 3% of the stock issue.

The proceeds of the stock sale to the company are $24,250,000 ($25,000,000 - $750,000 expenses) and this $24,250,000 goes to the company as stockholders equity.

In setting the corporate goals and budget, the Chief Financial Officer knows that net income of $3,000,000 or $3 per share is needed to meet the shareholders' expectation -- the market required rate of return of 12%. This net income can be paid out entirely as dividends, retained entirely for reinvestment in the business, or paid out and retained in some combination according to the desires of the shareholders.

That same $3,000,000 net income is a return on equity or cost of equity capital to the firm of 12.37% ($3,000,000/$24,250,000 = 12.37%).

The point of this example is that the cost of equity capital (or return on the equity capital that the company receives from shareholder investment) is always greater than the market required rate of return because of the expense of issuing stock.

Stock Price

The Commission seeks comment (at NPRM paragraph 27) on the stock price input to the DCF model, suggesting an average of monthly high and low stock prices. The DCF model is based upon the financial premise that the **current** stock (or asset) price reflects the present value of all **future** cash flows. An average of past monthly high and low stock prices is not the current

stock price. The cost of equity does vary as stock prices, interest rates, and investor expectations change with market conditions. I recommend averaging stock prices for a short period of time (i.e. a ten day average of stock prices to guard against the possibility that the selected stock price might be distorted by market reaction to a news story, heavy buying or selling by a particular institution, or some other distortion.

Risk Premium Methodology and Capital Asset Pricing Model

The Commission seeks comment on risk premium and capital asset pricing model (CAPM) methodologies at paragraphs 31-33. My recommendation is to concentrate on the CAPM, and use the historical risk premium between stocks and corporate bonds as a reasonableness check on cost of capital estimates derived from DCF and CAPM models. The capital asset pricing model has been employed in finance for more than 30 years. It is among the most thoroughly researched concepts in modern finance. Harry Markowitz and William Sharpe were 1990 Nobel Prize winners for their work in finance. Sharpe's capital asset pricing model is based upon Markowitz's formal analysis of portfolio choices involving both risk and return and is almost universally applied in portfolio and investment management. Despite recent controversy in the academic community on the efficacy of the CAPM, it remains the dominant model for estimating the cost of equity capital.[16]

[16] Robert F. Bruner, Kenneth M Eades, Robert S. Harris, and Robert C. Higgins, "Best Practices in

Historical Risk Premium

The Commission notes at paragraph 34 that, in the 1995 represcription procedures NPRM, the results obtained from a historical analysis depend upon the time period chosen. The Commission seeks comment on from what time period historical risk premium information should be drawn. I have considered the issue of time period selection and have researched the financial literature and conclude that utilizing the full range of data available is the best approach. The market risk premium varies over time around some average or mean. The best estimate of that average or mean, and thus the best measure of the expected risk premium is the average risk premium over the longest period for which high quality data is available. That period of time is 72 years -- 1926 to 1997. This is explained in the well known and widely adopted works by Ibbotson Associates, the company that provides capital market data to finance researchers and practitioners:[17]

> A proper estimate of the expected risk premium requires a long data series, long enough to give a reliable average without being unduly

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Estimating the Cost of Equity Capital: Survey and Synthesis." Financial Practice and Education, Spring/Summer 1998, pp. 13-28.

[17] Ibbotson Associates, Stocks Bonds Bills and Inflation 1998 Yearbook: Market Results for 1926-1997, Chicago: Ibbotson Associates, 1998, pp. 156-157.

influenced by very good and very poor short term returns. When calculated using a long data series, the historical risk premium is relatively stable. Furthermore, because an average of the realized equity risk premia is quite volatile when calculated using a short series, a long series makes it less likely that the analyst can justify any number he or she wants.

Some analysts calculate the expected risk premium over a shorter, more recent time period on the basis that more recent events are more likely to be repeated in the near future; furthermore, the 1920s, 1930s, and 1940s contain too many unusual events. This view is suspect because all periods contain unusual events. Some of the most "unusual" events of this century took place quite recently. These events include the inflation of the late 1970s and early 1980s, the October 1987 stock market crash, the collapse of the high yield bond market, the major contraction and consolidation of the thrift industry, and the collapse of the Soviet Union -- all of which happened in the past 20 years. Without an appreciation of the 1920s and 1930s no one would believe that such events could happen. More generally, the 72 year period starting with 1926 is representative of what can happen: it includes high and low returns, volatile and quiet markets, war and peace, inflation and deflation, and prosperity and depression. Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time and their return expectations reflect this.

Expected Risk Premium

The Commission seeks comment on forward looking or expected risk premium estimates and asks what weight they should receive in the analysis. As an alternative to selecting a past

time period as representative of the expected market risk premium, the DCF model can be applied to a market index of stocks to develop an expected (ex ante) market risk premium: [18]

> The most fruitful approach to ex ante premiums uses the discounted cash flow (DCF) model to determine the expected market rate of return. In other words, use DCF to develop a current estimate of k_M; then find $RP_M = k_M - R_f$; and use this estimate of RP_M in the CAPM model.

Professor Harrington also suggests this approach as an alternative to the long term historical return:[19]

> R_m is the expected return on an average risk asset. Analysts have used two ways to determine the average expected return. One is a risk premium approach: the long term historical return on the risk-free asset is subtracted from the historical return on a proxy for all assets. ... Analysts also use an estimate of the expected market premium. This estimate may come from information derived from security analysts working in money management companies whose job it is to make forecasts for individual stocks. Putting all the forecasts together produces a consensus estimate of the expected U.S. stock market return.

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[18] Eugene F. Brigham and Louis C. Gapenski, Financial Management Theory and Practice 4th Ed., Chicago: The Dryden Press, 1985, p. 282.

[19] Diana R. Harrington, Corporate Financial Analysis, 4th Ed., Homewood, IL: Richard D. Irwin, 1993, p. 208.

I recommend that the expected return on the market be estimated as the market weighted average of individual DCF estimates for the expected returns on each of the S&P 500 or S&P 400 companies. The market weighted average is appropriate because the S&P indexes are market weighted indexes. From this expected return on the market, the current intermediate or long term Treasury bond yields are subtracted to estimate the forward looking market risk premium. For example, if the weighted average DCF estimate for the S&P 500 companies is 14.0% and long term U.S. Treasury bond yields are at 5.25%, then the forward looking market risk premium is 8.75%. I recommend equal weighting of historical and forward looking market risk premium estimates.

Risk Free Rate

The risk free rate is generally accepted as that rate of interest paid by the United States government on its Treasury notes and bonds. For estimating required returns for equity investors (stockholders), intermediate to long term risk free rates are commonly employed by corporations and financial advisors,[20] and recommended in finance texts:[21]

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[20] In a recent survey on cost of capital practices, 33% of corporations used 10 year Treasuries and 33% used 10-30 year Treasuries as the risk free rate. 30% of financial advisors used 10-30 year Treasuries and 40% used 30 year Treasuries as the risk free rate.
Robert F. Bruner, Kenneth M Eades, Robert S. Harris, and Robert C. Higgins, "Best Practices in Estimating the Cost of Equity Capital: Survey and Synthesis." Financial Practice and Education, Spring/Summer 1998, pp. 13-28.

[21] Diana R. Harrington, Corporate Financial Analysis, 4th Ed., Homewood, IL: Richard D. Irwin, 1993, pp. 204-205.

> "R_f is the risk free rate of return. In theory this return should entail no risk, including any risk of purchasing power loss from the impact of inflation on prices. In practice, most analysts choose a proxy that includes inflation. For investors in U.S. securities, the proxy probably would be a U.S. Treasury instrument. The analyst would choose a Treasury bond that will be outstanding for a period similar to the asset being evaluated. Because equity securities have long lives, a longer-term U.S. treasury is a good choice."

In addition to matching the long life of equity securities, intermediate to long term risk free rate are also appropriate for these reasons:

1. Short term interest rates are volatile and setting rates based upon Treasury Bill yields could lead to frequent rate proceedings and volatile telephone rates.

2. Short term rates are heavily affected by external factors such as the Federal Reserve's monetary policy.

3. Empirical studies have shown that the true risk free rate is consistently higher than short term Treasury rates.

4. A long term focus is consistent with the asset lives and long term maturity debt structure of local exchange companies.

5. A long term focus is consistent with the time horizon involved in the DCF method (essentially infinite) which is also used in estimating the return required by equity investors.

Beta

The Commission notes that in the 1990 proceeding, parties proposed using betas provided by the *Value Line Investment Survey*. Value Line's betas are adjusted and the Commission tentatively concluded that adjusted betas were not consistent with the theory of CAPM. The Commission seeks comment on whether it should reconsider the use of adjusted betas and whether S&P betas should be used for this proceeding.

There are a number of published beta sources, most of which publish adjusted betas. The reasons why historical beta information should be adjusted is explained in this excerpt from the textbook, Investments:[22]

[22] Zvi Bodie, Alex Kane, and Alan J. Marcus, Investments, Homewood, IL: Irwin, 1989, pp. 271-272.

The motivation for adjusting beta estimates is the observation that, on average, the beta coefficients of stocks seem to move toward 1 over time. One explanation for this phenomenon is intuitive. A business enterprise usually is established to produce a specific product or service, and a new firm may be more unconventional than an older one in many ways, from technology to management style. As it grows, however, a firm diversifies, first expanding to similar products and later to more diverse operations. As the firm becomes more conventional, it starts to resemble the rest of the economy even more. Thus its beta coefficient will tend to change in the direction of 1.

Another explanation for this phenomenon is statistical. We know that the average beta over all securities is 1. Thus, before estimating the beta of a security our guess would be that it is 1. When we estimate this beta coefficient over a particular sample period, we sustain some unknown sampling error of the estimated beta. The greater the difference between our beta estimate and 1, the greater is the chance that we incurred a large estimation error, and that, when we estimate the same beta in a subsequent sample period, the new estimate will be closer to 1.

The sample estimate of the beta coefficient is the best guess for the sample period. Given that beta has a tendency to evolve toward 1, however, a forecast of the future beta coefficient should adjust the sample estimate in that direction.

Merrill Lynch adjusts beta estimates in a simple way. They take the sample estimate of beta and average it with 1, using the weights of two thirds and one third:

Adjusted beta = 2/3 (Sample beta) + 1/3(1)

The most widely available published beta sources are Value Line and Merrill Lynch. Both of these services adjust raw beta information. Other beta sources that I am aware of are CompuServe, S&P Compustat, BARRA, ALCAR, and Bloomberg. CompuServe and ALCAR

provide adjusted betas, S&P Compustat provides raw betas, Bloomberg provides both, and BARRA publishes "fundamental" betas which are adjusted using proprietary formulas. My recommendation is that the Commission adopt the prior recommendations and use Value Line betas along with Merrill Lynch betas. Both are widely available to investors and are comparable in that they use five years of historical data and perform comparable adjustment procedures.

VII. FORWARD LOOKING COST OF CAPITAL AND "NORMAL PROFIT."

Addressing the issue of "normal profit", the FCC's August 1996 Interconnection Order concluded that:[23]

> The concept of normal profit is embodied in forward-looking costs because the forward-looking costs of capital, *i.e.*, the cost of obtaining debt and equity financing, is one of the forward looking costs of providing the network elements.

In an incremental or forward-looking cost study, the cost of capital is the "normal profit" expected for new investment. This concept of normal profit in a forward-looking cost study is, however, often confused with the concept of "reasonable profit" or "fair return" common in regulation. Under regulation, a regulated company is entitled to recovery of its operating expenses and the opportunity to earn a fair return on capital invested to provide service.

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[23] *1996 Interconnection Order*, CC Docket 96-325, para 700.

Regulation uses the construct of a "rate base" which includes the assets used to provide service as the measure of capital investment. This rate base is accounted for on an original cost less accumulated depreciation basis and the fair return on capital is computed relative to that rate base. A book value capital structure reflecting the embedded financing of the rate base is appropriate for traditional regulation, and a fair return is based on that book value capital structure and the embedded cost of capital employed.

The regulatory book value capital structure is different from the financial reporting book value capital structure. Both are book value capital structures, but on a different basis. The book value capital structure on a telephone company's annual and quarterly financial reports differs from the regulatory book value capital structure primarily due to accounting changes for post retirement benefit obligations (SFAS 106) and discontinuance of accounting for certain types of regulation (SFAS 71). These accounting changes reduced the book value of equity for financial reporting, and thus the financial reporting capital structure has a higher proportion of debt.

Neither the regulatory nor the financial book value capital structure is the right capital structure for weighting the costs of new debt and equity. The market value, or in special circumstances, a target capital structure is the only appropriate capital structure for weighting the costs of new debt and equity. The special circumstances that would suggest a target capital

structure different from the market value capital structure would involve a company seeking to raise capital for a business expansion in an industry typically capitalized differently than its normal line of business. For example, a software development company evaluating capital requirements to purchase land and buildings for a large, multi-tenant office campus would likely use a target capital structure for that project with a high proportion of debt financing which is common in real estate as opposed to its own market value capital structure which would typically be nearly all equity.

Market value capital structures for companies in the Telecommunications Industry and the S&P 500 Index of companies are shown in Exhibit PCC-1. For both the large local exchange carrier companies and the S&P 500 companies, the market value capital structure is approximately 20% debt and 80% equity. The inter-exchange carrier companies average about 12% debt and 88% equity. The 20% debt / 80% equity market value capital structure is the appropriate capital structure for the forward looking cost of capital and the "normal profit" embodied in forward looking costs.

A book value capital structure is never appropriate for forward looking costs of capital. For incremental or new investment such as considered by the FCC for Interconnection and Universal Service support, the old regulatory paradigm is not relevant -- there is no rate base and there is no book value. New capital in the form of debt and equity will be raised to finance new investment.

For new investment or an incremental cost of capital, the financially correct capital structure weights to be used are the market values of debt and equity. The reason why market value is appropriate for the incremental capital structure is that market values represent the economic value of the firm. The incremental costs of new debt and new equity are priced in the market. For example, if new debt costs 7% and new equity costs 13%, those costs are related to the market values of the proportions of the firm financed by debt and equity. If new financing is to be done in proportions different from the current market value proportions, then the costs of debt and equity will be different.

For incremental capital cost, book values are not relevant. The financial literature is unambiguous in the conclusion that, for forward looking weighted average cost of capital, market value capital structure weights are appropriate:[24]

> **The Unadjusted Weighted Average Cost of Capital**
> We will use the symbol *E* (for equity) to stand for the *market* value of the firm's equity. We calculate this by taking the number of shares outstanding and multiplying it by the price per share. Similarly, we will use the symbol *D* (for debt) to stand for the market value of the firm's debt. ...
>
> We emphasize here that the correct way to proceed is to use the *market* values of debt and equity. Under certain circumstances, such as a privately owned company, it may not be possible to get reliable estimates of these quantities. In this case, we might go ahead and use the accounting values for

[24] Stephen A. Ross, Randolph. Westerfield, and Bradford D. Jordan Fundamentals of Corporate Finance, Burr Ridge, IL: Irwin, 1993, p. 495-496.

debt and equity. While this is better than nothing, we would have to take the answer with a grain of salt.

The Weights[25]

We begin by measuring the weights, D and E. There are two common ways to do this, only one of which is correct: Use the *book values* of debt and equity appearing on the company's balance sheet, or use the *market values*.

To decide whether book weights or market weights are appropriate for measuring the cost of capital, consider the following analogy. Suppose that 10 years ago you invested $20,000 in a portfolio of common stocks which, through no fault of your own, is now worth $50,000. After talking to stockbrokers and investment bankers, you feel that a reasonable return on the portfolio, given present market conditions, is 15 percent. Would you be satisfied with a 15 percent return on the original $20,000 cost of the portfolio or would you expect to earn 15 percent on the current $50,000 market value? Obviously the current market value is relevant for decision making; the original cost is sunk and therefore irrelevant. Thus the market values of debt and equity are appropriate for measuring the cost of capital.

The evidence is clear and the conclusion is straightforward: For ratemaking and return on rate base, the book value or embedded capital structure is appropriate. For a forward-looking or incremental cost of capital, the market value capital structure is required.

The embedded cost of debt is different from the incremental cost of debt. The embedded cost of debt is the interest cost on debt issued by a company in the past. The incremental cost of

[25] Robert C. Higgins, Analysis For Financial Management, Homewood, IL: Business One Irwin, 3rd Ed, 1992, pp. 269-270.

debt is the cost of new debt financing. The cost of new financing is the market yield required by investors (plus issuance costs) for bonds to be issued to finance new investment. The embedded cost of debt relates to previous bond issues (some of which may have been 25 or 30 years ago) for financing supporting embedded plant and equipment in the rate base.

VIII. FORWARD LOOKING COST OF CAPITAL VS. "REASONABLE PROFIT" OR "FAIR RETURN."

A "fair return" in the context of rate base regulation is not the same as "normal profit" in the context of forward looking costs. In the context of regulation, a "fair return" is evaluated in the context of investment that has already occurred. The embedded amount of debt is given a fair return equal to the contractual cost of that debt. Much of the debt in place for local exchange carrier companies has contractual rates that are very different from the cost of new debt financing. The embedded amount of equity is given a fair return equal to the return required by equity investors.

The "fair return" afforded to regulated companies is only an interim step in the setting of rates for utility customers. The fair return is used in determining a revenue requirement which becomes the basis for customer rates. Commission authorized returns also lack relevance for

forward-looking cost studies because the authorized returns may be quite dated relative to current financial market conditions.

In the context of forward-looking cost studies, normal profit is the cost of obtaining new capital investment. The cost of this new investment is determined by the financial markets -- it is the profit or return required by investors to buy new bonds and stock from a company desiring to finance new investment. The return required by the investors is proportional to the risk of the new investment and related to returns available on other investment alternatives of equivalent risk.

IX. FORWARD LOOKING COST OF CAPITAL AND THE FCC ORDER IMPLEMENTING THE 1996 TELECOM ACT

The FCC published criteria for cost studies for Federal Universal Service Support states that:[26]

> The rate of return must be either the authorized Federal rate of return on interstate services, currently 11.25%, or the state's prescribed rate of return for intrastate services.

This guideline is not consistent with the FCC's August 1996 Interconnection Order cited previously and is also not consistent with the previous guideline in paragraph 250. The FCC Interconnection Order clearly supports forward looking incremental capital costs:[27]

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[26] Report and Order in CC Docket 96-45, para 250.

[27] *1996 Interconnection Order*, CC Docket 96-325, paras 691, 700, 704.

> The forward looking costs of capital (debt and equity) needed to support investments required to produce a given element shall be included in the forward looking direct cost of that element. (¶ 691)
>
> The concept of normal profit is embodied in forward looking costs because the forward looking cost of capital, *i.e.*, the cost of obtaining debt and equity financing is one of the forward looking costs of providing the network elements. This forward looking cost of capital is equal to a normal profit. (¶ 700)
>
> We read section 252(d)(1)(a)(I) to **prohibit** states from conducting traditional rate of return or other rate based proceedings to determine rates for interconnection and access to unbundled network elements. (¶ 704) (Emphasis added.)

The FCC order implementing universal service provisions states:[28]

> Only long run forward looking economic cost may be included. The costs must not be the embedded cost of the facilities, functions, or elements. (¶ 250)

The FCC cannot on the one hand, require forward looking cost analysis based on the cost of new debt and new equity and, on the other hand, require the federal or state prescribed rate of return based on embedded costs. The two are logically inconsistent and mutually exclusive. The preponderance of emphasis on forward looking economic costs in both orders leads me to the conclusion that the FCC views its 11.25% authorized return as a reasonable starting point or "default value" for the normal profit to be included in pricing universal service rather than a dictum requiring the application of embedded capital costs.

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[28] Op Cit

X. CONCLUSION AND RECOMMENDATION

The local exchange telephone industry is no longer a monopoly and thus the special case paradigm of finance from regulation is no longer applicable. The so-called "fair return" based on book values of capital and embedded costs is not fair because the industry participants are not uniformly regulated. The introduction of competition has severed the linkage between market economics and regulatory accounting – regulation is no longer a substitute for market economics. For all telecommunications companies, including those over which the FCC still retains vestiges of regulatory control in the form of price caps or unitary rate of return, the relevant cost of capital is the forward looking cost of capital -- the cost of capital associated with new investment.

Through its NPRM, the Commission seeks comment on issues related to cost of capital estimation and I have provided recommendations related to capital structure and debt and equity cost estimation.

Market forces are the most efficient and fairest allocator of resources and I believe the FCC's public policy interests would be best served by forgoing the prescription of a unitary rate of return and letting competitive market forces allocate capital. If the Commission proceeds to prescribe an authorized unitary rate of return as outlined in the NPRM, I suggest that the

Commission set its focus on new investment required to provide interstate access services. New capital in the form of debt and equity will be raised by the local exchange carriers to finance these investments and the financially correct cost of capital is the market determined costs of new debt and new equity financing weighted by the relative market values of the firms' outstanding debt and equity capital.

Respectfully submitted,

Peter C. Cummings

January 14, 1999

Subscribed and sworn to before me this 14th day of January, 1999 Witness my hand and official seal.

My Commission Expires:

May 8, 2000

Notary Public

MARKET VALUE CAPITAL STRUCTURES
End of year 1997 ($ millions)

	Total Debt		Equity Market Value		Total Capital	
	Dollars	% of Capital	Dollars	% of Capital	Dollars	% of Capital
Ameritech	7,646	14.7%	44,195	85.3%	51,841	100%
Bell Atlantic	19,608	21.7%	70,666	78.3%	90,274	100%
BellSouth	11,054	16.5%	55,862	83.5%	66,916	100%
GTE	17,892	26.3%	50,055	73.7%	67,947	100%
SBC Comm	14,972	18.2%	67,290	81.8%	82,262	100%
USWC Grp	5,646	20.5%	21,864	79.5%	27,510	100%
LEC Total	**76,818**	**19.9%**	**309,932**	**80.1%**	**386,750**	**100%**
AT&T	10,824	9.8%	99,583	90.2%	110,407	100%
MCI	6,137	16.9%	30,268	83.1%	36,405	100%
Sprint	3,880	13.3%	25,209	86.7%	29,089	100%
IXC Total	**20,841**	**11.8%**	**155,060**	**88.2%**	**175,901**	**100%**
S&P 500		**20.6%**		**79.4%**		**100%**

CERTIFICATE OF SERVICE

I, Shelia L. Smith, hereby certify that on this 19th day of January 1999, copies of the foregoing were served on the following by hand:

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